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of the IBM PC develop-
ment in the Apple
II? • The IBM "pilot"

along at 4.77 MHz, while the other "test co-processor" ran at 1.19 MHz. By comparison, the Apple II's CPU ran at a less than startling 1 MHz—the original PC was running a speed demon. And while the IBM had a full 16-bit external bus, the actual processor speed wasn't significantly faster—surprisingly, actually, the IBM and IBM were basically identical. According to the

Hardware Bible Web site (<http://www.hardware-bible.com/processors/ibm.htm>), the IBM was originally clocked at 0.945 MHz—not much different than the IBM's 1.19. There was a lot of IBM system variation, but IBM wasn't going to risk a more expensive processor. This led to the IBM being the 8-bit external bus—most that was designed for the IBM PC could be easily modified versions of code closely simi-

lary for the 8-bit CPU systems.

• The IBM "could use up to 1 MB of RAM" The IBM 286 IBM initially wanted to divide that memory space into 528K for OS and programs and 312K for users. IBM... However, who was to be the first to give the operating system, for the IBM 286 IBM had pushed them to change 528K to 400/512. Once again, note that the IBM PC IBM initially was limited to 640 on the motherboard—and the Apple II and CPU systems that were then current were limited to 640K RAM. IBM (to 1 MB) seemed like a decent interim goal at the time.

• "Up to eight colors at 320 x 200" When I was four years old, I saw a lot of the IBM games that I remember seemed to have four colors: often pink, light blue, white and black, or the lower green, orange and black.

• The killer app—was the spreadsheet... But in the VisiCalc program—?

Yes, VisiCalc was available prior to 1-2-3 (as was Microsoft Multiplan), but I don't think it was ever a killer app on the PC. It was certainly the killer app for the Apple II in business (and is a lesser extent the CPU systems), a couple of years prior to the PC introduction.

When IBM 1-2-3 was released a couple of years later, it quickly became the killer app that pushed the IBM PC (and others) into the business world. By the way, VisiCalc PC is now freely downloadable from the author Dan Bricklin's Web site (<http://www.bricklin.com/home/visicalc.htm>)—and is out of date to run.

• I quickly moved to a PC XT version. Based on the faster Intel 80486 processor and up to 1 MB of RAM.

Being the XT I have it in my garage along with my original PC was 80486-based, and moved out at 512 KB on the motherboard (though you could add an expansion card to get up to 1 MB of RAM)—any more RAM than that and you were into the unpopulated world of DOS memory expansion cards. And like the original PC, the XT ran at 4.77 MHz (later faster XT clones ran at 8 MHz or even 10 MHz). It did include an (optional) hard drive controller and could be ordered with a 10 MB hard drive. The XT was released May 8, 1983, while the much more revolutionary AT was released in Aug. 1984.

Describe my evolving over historical time. It was an enjoyable article.

Alan Zeman

The article "Happy 20th birthday, IBM PC!" in the August issue of *The Computer Paper* has a couple of minor errors. The article states the CPU came from Commodore. In fact, it originally was developed by chipmaker Intel, which was later bought by Intel. Also, it implies that the IBM could use up to 1 MB of RAM when compared to the IBM. The general difference between the IBM and IBM was the width of the external database. The IBM external data bus is eight bits wide and the IBM was 16. Beyond that there's no functional difference between the two. They can both access 1 MB of RAM. Also the XT like the original PC code with an IBM CPU. The IBM 286 started in the article.

Joan Rivers

Not obstructing a Row?

I read a report in your paper in March 1999 concerning PCs and you listed the IBM Aptiva II Series 534 in the Editor's Choice and 3 put

Continued on page 72

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Intel Pentium 4 3.0GHz	Intel Pentium 4 3.0GHz	1MB	1GB	40GB	15"	Yes	Yes	Windows XP	3 Year

Model	Processor	Cache	RAM	Hard Drive	Monitor	Keyboard	Mouse	OS	Warranty
Intel Pentium 4 3.0GHz	Intel Pentium 4 3.0GHz	1MB	1GB	40GB	15"	Yes	Yes	Windows XP	3 Year
Intel Pentium 4 3.0GHz	Intel Pentium 4 3.0GHz	1MB	1GB	40GB	15"	Yes	Yes	Windows XP	3 Year

Model	Processor	Cache	RAM	Hard Drive	Monitor	Keyboard	Mouse	OS	Warranty
Intel Pentium 4 3.0GHz	Intel Pentium 4 3.0GHz	1MB	1GB	40GB	15"	Yes	Yes	Windows XP	3 Year
Intel Pentium 4 3.0GHz	Intel Pentium 4 3.0GHz	1MB	1GB	40GB	15"	Yes	Yes	Windows XP	3 Year

Model	Processor	Cache	RAM	Hard Drive	Monitor	Keyboard	Mouse	OS	Warranty
Intel Pentium 4 3.0GHz	Intel Pentium 4 3.0GHz	1MB	1GB	40GB	15"	Yes	Yes	Windows XP	3 Year
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Model	Processor	Cache	RAM	Hard Drive	Monitor	Keyboard	Mouse	OS	Warranty
Intel Pentium 4 3.0GHz	Intel Pentium 4 3.0GHz	1MB	1GB	40GB	15"	Yes	Yes	Windows XP	3 Year
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WHAT'S NEW

ACER's goes mobile, French

In response to demand from users in both France and Québec, Acer Inc.-based Acer Systems International Inc. has introduced a French version of AcerNet 3.1 PowerPack.

The suite of digital imaging tools includes the latest version of AcerNet software for managing and sharing digital images (AcerImage), a multimedia slideshow and a screenwriter (AcerNet), and AcerImage (image-enhancing software).

AcerNet PowerPack 3.1 is available for Windows 95. The full version of the software can be downloaded from the company Web site, or can be free trial version.

AcerNet 3.1 is also available in English, Spanish, German, Portuguese, Italian, Dutch, Swedish, Chinese (traditional and simplified), Japanese and Korean.

In addition to new language versions, Acer



Systems has introduced AcerNet Mobile for Palm OS, for viewing, sharing and allowing digital images on Palm-compatible handhelds. The software allows users to transfer images from their desktop or notebook PC to their handheld. It converts image types to the Palm OS handheld and, when used with the full version of AcerNet, converts more than 40 image formats.

AcerNet Mobile for Palm OS transfers images in "file-to-Palm" or as original image streams. It allows users to organize image files into 25 categories, sort files by keywords by name, date and other parameters, and transfer by file name or in thumbnail view. Palm device users can

learn images to enter Palm OS keyboards that have AcerNet Mobile installed.

—TIP Staff

Cyber-bench to be installed in park

BURY ST EDMUNDS, England—IBM UK, the Microsoft-owned U.K. Web Network, is using an outdoor park bench to allow laptop users to plug in, surf the Web and enter e-mails.

According to PCN, "the world's first cyber-bench" is located in the Abbey Gardens, in the Suffolk town of Bury St. Edmunds, which is home to the home of Henry VIII. Situated where King John signed the Magna Carta in 1215.

Next, a specimen for IBM UK is in London, says details of the Internet bench, such as how many Internet connections it would have, were still being worked out. But he expects the bench to be online by fall. He says the bench will remain online for about three months, after which a device will be made whether to continue the project.

—Newsbytes

Microsoft 394-700 speakers add USB link. Due to its lower Apple-compatible connectivity, Sonosystems says it has added USB support to its Microsoft 394-700 full-range audio system.

"Apple made a commitment to USB audio connectivity last year," says Wendy Jackson, vice-president of sales and marketing for Sonosystems. "There are already Apple users that have our products who felt it necessary to provide USB port connectivity for new Apple computers, and products as well as legacy capabilities for other users."

Sonosystems says it developed an on-line audio architecture that runs over the standard USB port for an analogue 1/8 inch plug, which enables the 394-700 system both digital and analogue capable. According to a source cited using a 1/8 inch stereo plug at the USB port.

The company says the device easily will work with Mac OS X operating systems for Windows users. However, Sonosystems recommends continued usage of the standard analogue outputs to avoid "interfering" the USB port.

The Microsoft 394-700 full-range audio system with USB will be \$550.

—TIP Staff

Adobe ships PageMaker 7.0



With the release of the latest version of its page layout software, Adobe Systems Inc. (http://www.adobe.com) is targeting education, business professionals, and small offices/home office users. Adobe says PageMaker 7.0 is far better at helping users with limited design experience achieve professional results.

A key feature of PageMaker 7.0, according to Adobe, is the use of built-in PDF creation tools that allow users to create tagged files that will be displayed properly on a variety of devices, including laptop PCs, PDAs, and other wireless devices.

In addition to being tightly integrated with other Adobe applications—Acrobat, Photoshop, Photoshop Elements and Illustrator—PageMaker 7.0 has updated support for report writing, Microsoft Word files, and with updated file conversion support for Microsoft Publisher (16 colors version only) and QuarkXPress files. By September, Adobe says, PageMaker 7.0 will be released in Dutch, French, French Canadian, German, Italian, Norwegian, Spanish and Swedish versions. Brazilian Portuguese, Danish, Finnish, and Japanese versions are planned for later in the fall.

PageMaker supports Mac OS 8.6 (with Apple Software Test Manager Release Version 1.0), 9.1, and OS X (Classic) as well as Microsoft Windows 95, NT 4.0 (with Service Pack 5 or 6), 2000, and PageMaker 7.0 has an estimated street price of \$134.95, or \$219.95 to include a professional version (see the Adobe Web site for educational pricing).

—TIP Staff

Game developers eye Palm. Pocket PC's main game publisher, Life Soft (http://www.life-soft.com), has announced plans to develop 10 games for the Palm and Pocket PC mobile platforms by Christmas. Life Soft says it will develop the new game lines in partnership with its "brother" company, LifeWare (http://www.life-ware.com). The first Palm and Pocket PC releases from the collaboration will include Agony, Iron Gangs in Death Chamber, War, Inland Island, and Battle. In addition to games designed for the handheld PC, LifeWare is co-developing games for cellular phones with cell phone manufacturers and operators.

—TIP Staff

Dell's debuts 512 MB CF card



Dell Systems has announced the addition of a 512 MB CompactFlash (CF) Type I card to its line of often memory products. The CF 512 MB card is compatible with any device—including digital cameras, handhelds, and MP3 players—that has a CF Type I or Type II slot. In testing with a Nikon CoolPix 590 digital camera, Dell says, the card could store more than 300 high resolution images. Dell says the new 512 MB CF card will start for about \$149.

—TIP Staff

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IT employment: Crisis, what crisis?

By Jeff Brown

It has been said that the reason the North American high-tech industry holds its longest trade shows, Fall Comdex, in Las Vegas is that the computer and the gaming industry have a lot in common. The technological optimists who have built a trillion-dollar global IT industry dream big, bet big, and when the dice come up snake eyes, they crash and burn real big, too.

The last 12 months has been one long hangover from the Internet bubble party that raged on from 1996 through to mid 2000. Hundreds of dot-coms have evaporated in the past year. In the U.S., more than 550 major venture capital-funded dot-coms hit the dust between October 2000 and May 2001, and the failed Internet startups took many billions of dollars in investors' cash along with them. The American PC market has also slumped, and slowing demand for server, mainframe and telecom infrastructure products has hit five major computer companies like Nortel, Cisco and Lucent hard.

Yet, even while billions of jobs tremorously slip have been flying, and tens of thousands of once highly paid Internet workers have had to scramble to find new gigs, a dear shortage of skilled information technology workers still exists in certain job categories, according to employment experts at the U.S. and Canada.

What's really going on?

Are there information technology job openings all over, or not? As we'll show, the IT industry is still growing strongly, but it is growing much differently than a year ago. There are many aspects of the current restructuring of the IT industry that are offering new opportunities as well as closing pain. The trick is to know where the major areas of employment opportunities are developing to have the skills that industry needs today, and to leave the defunct technologies the Internet has spawned to help you look up with potential employers.

Was IT skills shortage: Is it real?

According to U.S. Department of Commerce figures, there were at least as many as 856,000 unfilled job openings in the high technology industries in 2000. In U.S. high tech regions new industries in 2000 are letting more than 50% of employees go. U.S. Labor Department figures for June 2001 showed job losses in the U.S. numbering 174,852, with 27,446 of these in high-tech companies. The figures are less than for actual skilled high-tech workers than first glance would indicate, however, as they make up only a small portion of that 27,446. Unless a firm goes bankrupt, it rarely purges engineers, analysts, and network experts are usually the last to be let go. Many of the layoffs/cancellations at tech firms have been at "soft" categories, such as user training and human resources, and at the core of Commerce, PC, manufacturing, shipping, administrative, and other non-IT jobs.

In the wake of the dot-bomb, the PC slump, and mass layoffs at Nortel, Compaq, and many other tech firms, are there any IT openings still out there? The answer is yes. In fact, there is still an IT skills shortage, and the jobs really do exist... if you have the right skills and know how to work the Internet job network.

According to U.S. recruiters, IT graduates of the top universities and colleges are still in high demand in 2001. Starting salaries for computer science and IT-related engineering graduates have remained strong, at the \$50,000 to \$55,000 range. What has changed is that the perks offered in the era of dot-com money—signing bonuses, stock options, and even new cars and housing and moving expenses—have evaporated.

Also, the current crop of IT grads seem to have experienced a pendulum shift in expertise: more solid a year ago, big and boring in fact: IBM or the IT department of a financial institution is a more desirable first job for many graduates than a fully startup.

There are signs that the mild recession in the U.S., which has accompanied the turmoil in the high-tech sector, may be easing. Industry shipments, including shipments of semi-conductors, increased during the summer. While the desktop PC market may not regain its former annual growth rate of 15 percent, the rest of the tech sector seems likely to ensure strong growth by the end of the year.

Bound work

As noted, the current high tech slump in the U.S. seems to be a continuation of an over-reliance on desktop PCs, a reliance that the mid-level and lower dot-com firms, rather than a rejection of IT by corporations, or a rejection in real long-term IT job opportunities.

In the longer run, the future of IT seems to be bright. One reason for that optimism is that outside the abnormal hubbub of Internet startups, information technology has become the most critical, common technology of traditional businesses. And the companies that have moved away from IT are missing and missing. According to a Pew-Washington Center report in the spring of 2001 (<http://www.pewresearch.org>), U.S. companies that made effective use of the Internet had productivity per worker increase 7.7 times that of companies that didn't use the Internet, with revenue gains to match.

Smart companies generally avoid setting up expensive, separate Internet-only operations. Instead, they integrated networks, databases, and the Internet with their regular business practices, and have grown as Internet capability naturally to support their



existing brick-and-mortar business.

In many cases, the best and the best of professionally managed companies' IT budgets go to the publicly visible Web site: most of the resources are expended on internal networks, intranets, messaging and groupware, database and customer relationship management (CRM), knowledge management (KM), and automation of core business processes. The use of the Internet, as an extension and empowerment of the traditional business, rather than as a substitute for it, is less speculative, but appears to be more successful, and the IT personnel of such companies will have their jobs. Particularly in the area of CRM, IT is being used on a huge scale to integrate knowledge about customers with product development, manufacturing, ordering, marketing, and selling. According to a report by CGI (<http://www.cgi.com>), Canada's largest IT consulting firm, global businesses will be

spending up to \$90 billion on computerized CRM systems within the next five years. Financial institutions such as banks, insurance companies, and investment houses will be among the biggest spenders in this area.

The major positive trends in the information technology revolution are therefore still strong, and many other very solid and demographic movements support them.

As documented on KiraNet (<http://www.kiranet.ca>), a global directory of opportunities in the world, the United Nations and national governments across the developing world have discovered IT and the Internet as an effective vehicle for economic and educational progress. Countries from Ghana to Grenada are struggling to close the digital divide between the wired world here (such as Canada) and the less-wired.

Baby boom, bulging bowlers

The job situation in Canada, which has been largely unaffected so far by the U.S. recession, remains highly favorable for IT employment at the time of writing. Overall, employment has soared in Canada since the end of the 1990 recession. According to Statistics Canada (<http://www.statcan.ca>), over the last four years unemployment has declined from 15.5 percent in 1997, to seven percent in March 2001. More than 1.4 million new jobs were created during the same time, with existing jobs now increasing and long-term Canadian residents to show the benefits of the improving job situation. According to the Information Technology Association of Canada (<http://www.ita.ca>), around 31,800 high-tech jobs are still vacant, while a survey of 179 Canadian tech information officers found that 70 percent felt that the skilled IT staff shortage has not eased.

A shortage of skilled high-tech talent has become a driving force in Canadian career development, prompting an alliance of high-tech firms and universities called AMPower (http://www.ampower.com/en/employ_myself.htm) to target the recruitment of 3500 industry professionals to train more IT industry professionals at Canadian colleges and universities.

Demographically, the "baby boom" that began in Canada in the late 1950s, in both rates plunged, a new demographic in the smaller members of Canadian-born workers entering the job market. (Baby boomers are those born in the unindustrialized countries between 1946 and 1961, when birth rates temporarily returned to traditional levels following the Second World War.)

Though the oldest are just turning 45, baby boomers who can afford to be starting to retire, and the over-45 population is already beginning to balloon. Both these trends will mean a shortage of new workers of all types, not just in the IT sector.

According to Statistics Canada, between

Continued on page 22

IT employment: Crisis, what crisis?

Continued from page 29
2001 and 2002, the number of workers in the 30- to 39 year-old age group will decline by 8.1 percent. By 2016, the total number of workers over 40 actually start to decline, as the number of retiring baby boomers becomes a main factor.

The only solution to the looming short-ages of young workers in Canada are increased immigration, automation and rationalization of work through information technology wherever possible. Flexible employment and work options to allow older people to continue to work if they wish, and lifelong education of all Canadians to constantly

increase skills and adopt new technology to Canadian needs. □

It is difficult to live as a writer prior to the 1990s. Even in a business publishing world and with above average, constant, and useful income, a writer in many Internet job sites. He can be reached via email at blawatt@proton.com.

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In-demand skills change, increase

If you want to find a job in IT or elsewhere—you should think like a *transversal* employee: Who needs you, and why should they hire you? Where is the job market going, and where are potential employers looking for the new employees?

As technology changes, and the ways it is used also change, more and more IT job opportunities can dry up, while new ones are created. For example, many solutions, referred to as "Web 2.0" applications, found themselves back at work during 2003, as support of everyone's personal pay until the New 2000 bug fixing market suddenly dried up on New Year's Day 2003.

During the dot-com bubble, content sites and business-to-consumer (B2C) sites were all the rage. The demand for writers, designers, artists, Flash animators, 3D artists, website designers, and audio and video technicians increased. When the unsustainable business models of Web entrepreneurs didn't pan out, all these "hot" jobs also evaporated, too. Web creative talent is still needed, but the nature of the work available and the kinds of companies requiring Web developers has changed.

At Rob Burgess, chief executive officer of Web and animation software maker Macromedia (www.macromedia.com) and at its convention with the Linux/Unix Paper, "Two years ago, young Internet animators were making into millions of dollars for their new animated Web series. In some cases, for just the concept of a video. It was nuts."

Now, Burgess states, Macromedia has seen a profound shift in the kind of work being done with its software. "Before, it was largely creative animation that drove the animation, typically commercial, entertainment and corporate on television. Now, it's 60 to 70 percent, say, help [companies] get training materials online, or to convey information or show how to do things. [It] [computer-based instruction] is where a lot of the activity is."

According to a Job Futures survey conducted in the spring by the Human Resources Development Canada (HRDC) Agency (<http://hrdc.gc.ca>), there were 10 fields of study with "good" employment prospects. Six were in engineering and technology, seven in health care, and seven in specialties in business, administration and management.

In an employment outlook forecast by the HRDC, computer engineers, systems analysts, programmers, electronics engineering technologists and technicians, and manufacturing technologists occupations were listed among the top employment opportunities.

—Jeff Fries



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IBM	100MHz	16MB	1GB	MS-DOS	\$1499
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Acer	233MHz	32MB	1GB	MS-DOS	\$1699

Model	Processor	RAM	Hard Drive	OS	Price
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IBM	133MHz	32MB	1GB	MS-DOS	\$1599
Acer	233MHz	32MB	1GB	MS-DOS	\$1699

Intel Pentium III Dream Machine

Pentium III Power User

Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499

Pentium III CD-Creator

Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499

P-III DOR Dream Machine

Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499
Intel PIII 600MHz CPU	600MHz	1GB	1GB	MS-DOS	\$1499

Warranty: All P-III / P-4 systems come with 3-year service & 3-year parts covered warranty

All Celeron & AMD systems with 3-year service & 3-year parts covered warranty

Options: Windows ME / 2000 Pro / \$248.00 / Acer 56K WinFax/Modem / \$40 / MS Office 97 / \$22 / Pro / \$200.00

Special: With a system purchase, get a Canon BJC-2100 (Dual Ink Jet) Color Printer for only \$20 (after \$50 Canon Retailer)

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AMD Dream Machine

AMD Power User

AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499

AMD DOR CD-Creator

AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499

AMD DOR Dream Machine

AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499
AMD K6-2 500MHz CPU	500MHz	1GB	1GB	MS-DOS	\$1499

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Intel STL2 Dual P-III Server	1300MHz	1GB	1GB	MS-DOS	\$1499
Intel STL2 Dual P-III Server	1300MHz	1GB	1GB	MS-DOS	\$1499
Intel STL2 Dual P-III Server	1300MHz	1GB	1GB	MS-DOS	\$1499
Intel STL2 Dual P-III Server	1300MHz	1GB	1GB	MS-DOS	\$1499
Intel STL2 Dual P-III Server	1300MHz	1GB	1GB	MS-DOS	\$1499

Dual P-III RAID Server

Dual P-III RAID Server	1300MHz	1GB	1GB	MS-DOS	\$1499
Dual P-III RAID Server	1300MHz	1GB	1GB	MS-DOS	\$1499
Dual P-III RAID Server	1300MHz	1GB	1GB	MS-DOS	\$1499
Dual P-III RAID Server	1300MHz	1GB	1GB	MS-DOS	\$1499
Dual P-III RAID Server	1300MHz	1GB	1GB	MS-DOS	\$1499

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Intel Celeron Net-Surfer

Intel Celeron Net-Surfer	300MHz	1GB	1GB	MS-DOS	\$1499
Intel Celeron Net-Surfer	300MHz	1GB	1GB	MS-DOS	\$1499
Intel Celeron Net-Surfer	300MHz	1GB	1GB	MS-DOS	\$1499
Intel Celeron Net-Surfer	300MHz	1GB	1GB	MS-DOS	\$1499
Intel Celeron Net-Surfer	300MHz	1GB	1GB	MS-DOS	\$1499

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**NEW
VE150m**



Choose from ViewSonic ViewPanel Displays...

	VE150	VE150m	VG150/b	VG151	VP150m
Panel Size	15.0"	15.0"	15.0"	15.0"	15.0"
Brightness (Typ.)	210	200	210	210	250
Contrast Ratio (Typ.)	350:1	300:1	350:1	350:1	300:1
Viewing Angle (H/V)	120/100	120/90	120/100	120/130	90/150
True Panel Resolution	1024x768	1024x768	1024x768	1024x768	1024x768
Embossment	TCD '99	TCD '99	TCD '99	TCD '99	TCD '99
Special Features		Auto-adjust OSD lock	VE150b- black casing	Analog/Digital Multimedia	

	VE170s/b	VE170/b	VG170	VG181	VP181
Panel Size	17.0"	17.0"	17.4"	18.1"	18.1"
Brightness (Typ.)	220	220	230	235	235
Contrast Ratio (Typ.)	300:1	300:1	400:1	300:1	300:1
Viewing Angle (H/V)	120/130	120/110	160/160	160/160	90/150
True Panel Resolution	1280x1024	1280x1024	1280x1024	1280x1024	1280x1024
Embossment	TCD '99	TCD '99	TCD '99	TCD '99	TCD '99
Special Features	VE170s/b- black casing	VE170b- black casing	SuperClear MVA Technology	Analog/Digital Composite Video	Analog/Digital Multimedia



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There's no better time to step up to the advantages of award-winning LCD displays from ViewSonic®, the #1 best-selling display monitor company in Canada.* Our high-performance displays are designed with proven innovation and award-winning quality and reliability.

Exclusive Technology Ensures Best Possible Image

The VE150m is the first 15" flat-panel LCD display to offer a zero-touch auto-focus feature, delivering the best possible image in all environments. And the built-in speakers sound great, even when the panel is wall-mounted.

The VE150m produces images that are bright and crisp, with a resolution of 1024x768, 200 nits of brightness and a contrast ratio of 300:1. This flicker-free display with virtually no magnetic field, eases eyestrain and provides a safer working environment.

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Be sure to visit ViewSonic.com to find the world's widest selection of LCD features and sizes - 14", 15", 17", 17.4" 18", and coming soon 20" and 23".



ViewSonic
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Leader or follower?

Continued from page 27

acted as "accelerating the [Atlantic] region's capacity to carry out leading-edge research and development that directly contributes to the development of new technology-based economic activity in the region."

Tobin also visited other technology clusters across the country, including Ottawa,

where he launched the Innovation Systems and Economic Development project at the University of Toronto, and announced a Technology Partnership Canada agreement with other Technology Development centres, a leading developer of semi-conductor silicon computer systems.

Tobin is also promoting Canada's Internet economy as a lure for U.S. investment in and

Made with Canada. At a meeting of the Committee for Economic Development in the U.S., Tobin claimed that "Canada is well positioned as today's digital economy and will continue to prosper. Our highly skilled work force, sound tax cuts, business climate, and technology clusters spread across the country make Canada a premier innovation location." □

Another view of the tablet PC

By Sean Connolly

A big frustration of pen-based computing is trying to work efficiently on the small screen of a palm-sized device. In the day, this is a portable device with a large screen typically requires a mouse to a full resolution, which means always having to find a place to set it down when you want to enter data.

A few companies have released slightly larger hybridized free tablet-style devices, but without work screens outside of niche markets. Tablet PCs with Windows CE were useful if you wanted an instant-on solution, but typically revert after such to justify their price—a large screen, but little in the way of connectivity, and they were sometimes difficult to interact with (doodling every afternoon, okay at times).

Moving to a full Windows 95 or 98 installation made the device more powerful but also had drawbacks. First, the more powerful OS increased the hardware requirements, and thus the size and cost. Also, a full Windows OS meant a full-length install up, instead of instant on.

Enter Windows (pre/Post-Internet) into the pen-based computing arena. Already known for its display technology (RT monitors, L2D monitors, and more), ViewSonic's debut in the larger-format, pen-computing category is a natural extension of its current business. At the recent Greater Canada, held in Toronto in mid-July, ViewSonic introduced two new products, the ViewPad 300 SuperPDA and the ViewPad 3000 Tablet PC.

For those who like the design of the palm-sized Pocket PC devices but



want more screen space, ViewSonic offers the ViewPad 300 SuperPDA. The ViewPad 300 comes with a 36-inch screen (1024x600 resolution) that allows between portrait and landscape modes, 32 MB of flash memory and 64 MB of SDRAM, as well as a number of connectivity options: Infrared and serial ports, USB, Ethernet, infrared, VGA-out, a PC card and a Type II CompactFlash slot. It runs Windows CE 5.0 (and is, thus, an instant-on device) and runs on a 200 MHz Intel StrongARM processor. It has a built-in webcamera, infrared, an battery designed to provide between five and 30 hours of power.

The whole unit is less than 2.66 in [1

(Continued on page 31)

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Hands On

Lab Test • Hardware Evaluations • Software & CD-ROM Reviews

Hand-to-hand combat

In the battle for market share, handheld manufacturers are packing more and more features into slimmer and lighter devices. TCP Lab offers this report from the front lines

By Sean Connolly

When US Robotics introduced the original Palm Pilot organizer in 1996, it wasn't a given that it would go anywhere—handheld electronic organizers had been around for a while, but they were considered more of a novelty than anything. The Palm Pilot turned the category on its ear. Unlike other self-contained electronic organizers, you could hook the Palm Pilot up to your PC for backup and to load new software applications as they become available.

This revolution caught Microsoft's attention, but where the Palm was built a handheld and software solution, Microsoft concentrated solely on the software component, leaving out the Windows CE operating system. While Palm was a very basic operating system, Windows CE was an attempt to replicate a full Windows desktop experience in the palm of your hand. There were, however, some initial difficulties with its organization and usability, such that many users shied away from it. Microsoft's later software improvements, its emergence as Windows for Pocket PC, with the category name often decreased to Pocket PC.



While there were a number of larger Windows CE devices with built-in keyboards, manufacturers seem to have settled on pen-based computing as a form factor

that fits as your pocket. This month we took a look at a few of the options currently available.

Continued on page 34

Pricey Mavica's CD-RW memory should appeal to pros, travellers

By Steve Brumsted

Here's what's good about the dizzying pace of digital camera development: Here in the first year of the 21st Century, an 80-megapixel has gone up—latter optics, last those resolutions, more photographs—basically, prices have gone down. Take a look at the price tag on last year's \$2,399 three-megapixel camera. You can probably get it today for \$299. Here's what's bad: memory capacity and storage haven't kept up the pace. You can get a 34-MB SmartMedia or CompactFlash memory card for just over \$100, which can fit about 10 high-quality 3.5-megapixel JPEGs. That may sound cheap and plentiful, but for the avid photographer who routinely carries several rolls of film, the final cost might be a little daunting. There's also the Windows-based, still at \$450 to \$600 (340 MB to 1 GB) you're looking at more than half the price of a new camera.

Mavica CD40



From Sony
http://www.sony.com
Suggested retail price: \$1,295

Sony's original digital Mavica camera had incredibly impressive "film" storage: 144 MB. Sony says that could be had for under \$1. (Is it just at that time, huh? ubiquitous cheap indexes meant they were giving away free film everywhere you turned.) The format also meant no special software was required to download images. Happily, Sony continued the trend with the introduction of the CD-RW camera line late last

Continued on page 44

Paper, ink, and quality

TCP tests 18 inkjet papers in the search for photographic quality and value

By Jacques Savoy

According to Tera Research, 58 percent of those who have a personal computer and printer use the equipment to output photos. Of those with digital cameras, that percentage goes up to 79 percent.

No matter how you measure it, digital cameras are flourishing. The arrival of photo quality video cameras from Canon, Sony, HP, Leica, and others, along with increasingly powerful digital cameras and

image-capturing software, make it easy to produce top-quality prints from thumbnails all the way up to tabloid size.

One factor that affects the quality of any print is the paper you use. Of the dozens of choices, which is the best? The old adage that "you get what you pay for" generally applies to inkjet papers. Our tests found that the least expensive, Georgia-Pacific CoverStock and HP BrightWhite Inkjet, presented the most problems in producing quality photo prints. Likewise, when licensing the price

we found that the more expensive 3-mil luminance consistently produced better prints—with less warping, fewer bubbles and scratches, and more rapid final production—than the 3-mil luminance.

However, the best results were not necessarily achieved by the most expensive materials.

Test procedures

Our tests were designed to look at two major groups of papers: glossy and matte. The tests

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AT&T Canada's MDCS facilities report

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Handheld control

Continued from page 11

The Palm universe

Where it comes to handheld PCs, most people think of Palm first and with good reason. The Palm operating system includes all the basic functionality most users need right out

of the box and the OS is sufficiently secure, tested (but you don't need a lot of onboard memory) and robust (consistently keeps the hardware cool down).

The Palm OS features an icon-based menu system that is touch-sensitive. To navigate, you select icons and enter data with a stylus. The business part about using the interface is

learning, but after you enter data (a little handwriting, but not enough to write the screen like handwriting at times). The good news is that once you have it down, you can enter data at quite a clip.

Handhelds with Palm OS 3.5 onboard do not typically ship with connectivity software, instead requiring you to install those, complete

when you buy the connectivity hardware add-on. An email application is often loaded, but typically requires synchronization with an Internet-enabled desktop machine. The newer Palm OS-6 units have wireless Internet and email software included at the box, but often these must be user-installed.

As of the end of the first quarter of 2001, Palm OS-based devices still claimed over 80 percent of the market, even though the PocketPC platform's market due to continue to grow. Palm still has a huge user base, however, and, consequently will be well supported by third-party hardware and software vendors for the foreseeable future.

Palm OS 3.5

Price: \$149.95

Requires a screen

Supports email

• Palm OS 3.5

• Ultra-thin design

• Screen size: 3.1" (can be held in one hand)

• Screen is a color mode (65,536 colors)

• Screen is a 16:9 aspect ratio

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down names, search, and all other functions. As with all Palm devices, the new entries list can be scrolled, first letters through which the entries is listed, one or three buttons is exposed and can be pressed to show the first one, a portion of the LCD that is visible through a little window in the cover.

Those who want to personalize their device can select backgrounds in different colors: blue, blue, red, gold, and woodgrain. Replacement backgrounds are \$30 each.

Palm OS 3.5

Price: \$149.95

Requires a screen

Supports email

• Palm OS 3.5

• Ultra-thin design

• Screen size: 3.1" (can be held in one hand)

• Screen is a color mode (65,536 colors)

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Continued on page 36

Hand-to-hand combat
Continued from page 34

- Feature screen cover
- 1.25 in. thick
- Wide connectivity options included
- Synchronization software compatible with Windows 95/98/99, or OS/2 model for OS/2-LSI or PC

Using the same basic design feature as the others



line Palm OS the m500 up the ante. The m500 series (which includes the color LCD m505) was Palm OS 4.0, which has updated features and applications. More

importantly, however, the models in this line have an MMC slot (compatible with SD cards, too) on the top that can be used to add software modules or attach hardware, such as a camera or modem.

The model you choose depends on what you need from the device: the m500 is a slim model with a monochrome screen. But just \$70 more you get the color version, the

m505. It uses reflective TFT technology with optional backlights—great for those who work outside, but a lot of dim working under a lower-light conditions. We're inclined to spend a bit more and get the color version, since it seems a lot slyer to spend to make money and only get the monochrome model. Of course, your needs may vary. There are a number of modules already available in SD format for the MMC slot.

Our favorites in all the games card (140), includes Vegas Slots, Sun City and more! but there's also the Dictionary/Thesaurus card (145) includes Merriam-Webster Collegiate dictionary and Franklin's Thesaurus, and Travel Cards (140) rock one featuring U.S. cities, another European cities, using information taken from the Lonely Planet guides!

Handspring Vision Palm

From HandSpring, Inc.
http://www.handspring.com
Suggested retail price: \$499 (suggested list: \$249)
• Palm OS 3.5

- 16MB (base) 32 MB (max) internal expansion
- 8 MB of random memory
- USB synchronization cable
- Internal rechargeable lithium-ion battery
- Internal port
- Built-in microphone
- Open-plate screen cover
- Protective screen cover
- Springboard-style external keyboard and software (optional)
- Compatible with both Windows and Macintosh



It's no surprise that HandSpring is doing interesting and innovative things in the Palm world—the company was formed by members of the original Palm design team. HandSpring's biggest contribution is the Springboard dock, an open-backed arena in lay all devices in the Vision line that accommodates both hardware and software modules. Visions also come audio-ready with built-in microphones for use with compatible modules (cell phone, voice recorder, etc.). While the Vision Pream is thicker than the Palm m505, it's about the same price after currency conversion (at the time of writing). The Springboard dock also makes the Pream a lot more flexible—it becomes relatively easy to add an MP3 player, cell phone, or GPS module with just a slide and click. Though modules should soon be available for the Palm's MMC slot, Springboard modules are shipping already, and the open-backed format means modules integrate much better with the Vision, as there's not as much hardware to hang off the edge of the device.

Anyone who has used a Palm or Vision will have no problem using a Pream. Our biggest concern with this device is its online access.

Continued on page 38

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Hand-to-hand combat

Continued from page 38

handhelds, because Palm has such a lock on the category, providing virtually everything you need as a handheld. It also hasn't helped that the price point for Windows CE and Pocket PC devices has tremendously increased since that of Palm devices. Why would anyone want to move to Pocket PC, then?

Well, to start with, Pocket PC is already entering the release stage where it comes to full-value systems. It was there first, it's still there, and now the price is coming down. Perhaps, the Pocket PC desktop edition's Windows-like interface that will be similar to anyone who used a Windows desktop. The Pocket PC takes advantage of Microsoft's multimedia, Internet, and wireless and video capabilities. As well, for those who want to connect to a network, while most of the devices require additional hardware, the software is typically already installed, including Windows networking and a Pocket version of Internet Explorer.

Though adoption of Pocket PC is still slow (it shows 16 percent the entire category for somewhere between Research In Motion's 40 percent, and HandSpring's chunk of the Palm-based device, at 14 percent), it certainly is keeping from getting its quantity and may be positioned to become the technology of the future. In the past, people haven't had as much of a need for multimedia in the palm of their hand, but with the increasing popularity of applications like MP3 and digital imaging, it's possible that Pocket PC will finally find its niche. The fact that Compaq recently celebrated shipping of the one-millionth PDA seems a good indication of the trend.

Like the Palm, even Pocket PC devices use a stylus for input, though some of the larger dual-screen units have keyboards and slide-out keyboards are available for the palm-sized units (for bedsplatters). You can also use an on-screen keyboard to tap out your message via ribbon.

Either way, you will run into one of the big limitations of the palm-sized Pocket PC devices: screen space. At 240x320 pixels, the

screen is larger than the Palm or its kin, but Pocket PC also tries to duplicate the Windows experience, with menus and windows strung up previous screen and slide. If you're using your Pocket PC to surf the Web, suddenly navigating seems very tight. But if you can get used to the small screen, you're good to go.

Celco Casopelia EM-300

From Celco Corp.

<http://www.celco.com>

Suggested retail price: \$200

- 16 MB onboard memory
- 65,000-color TFT screen, 140x120 resolution
- MMC slot or up to six 1.44-MB disk floppies
- Internal port
- Headphone jack, built-in microphone
- USB connector to PC (optional external device) as well as cable
- Rechargeable lithium-ion battery pack
- Software: personalizer, calendar, journal
- Compatible with Windows 95/NT/2000
- Available in different colors: blue, green, or the like



Celco is taking full advantage of the Pocket PC platform by taking behind other manufacturers' added media functionality to a handheld. Celco used its

multimedia expertise to enhance its own PDA. The EM-300 is one of Celco's latest designs to beat the market, and it was one of the first handhelds we saw with an MMC expansion slot.

In addition to the style work, there are a lot of other ways to interact with the EM-300. The front of the device features buttons to scroll the calendar, contacts list, application menus, as well as a directional (8) pad for moving through menus and lists. It has an audio menu scroll button on the left side and a jog wheel for scrolling and selecting.

Because it has only 16 MB of onboard memory, the EM-300 is one of the cheaper Pocket PC handhelds (currently available, even cheaper than Palm's MMC-based 5000 series [other colour at approximately same]). For those who want to go the Windows handheld route, this is a cost-effective entry point.

Celco Casopelia B-125

From Celco Corp.

<http://www.celco.com>

Suggested retail price: \$200

- 12 MB onboard memory
- 65,000-color TFT screen, 140x120 resolution
- Type I CompactFlash (CF) slot or up to six 1.44-MB disk floppies
- Headphone jack, built-in microphone
- USB connector cable to PC (type, optional external device)
- Rechargeable lithium-ion battery pack
- Software: personalizer, calendar, journal
- Compatible with Windows 95/NT/2000



A lot more of a workhorse, the B-125 is more expensive than the EM-300, but it also comes with more of the onboard memory, and features the Type I CF slot, making it

compatible with high-capacity CF cards as well as IBM's microdrive (available at least up to 1 GB).

In addition to the style aspect, there are a lot of other ways to interact with the B-125. The front of the device features buttons for scrolling the calendar, contacts list, as well as a menu of applications. It also has a directional (8)-point for moving through menus and lists, as well as an audio menu scroll button on the left side, a jog wheel for scrolling and selecting, and a Windows button for bringing up your start menu.

One potential problem: the door covering the CF slot has a lock on it that comes completely off, which means that if you're not

careful, you might lose it—but it's a small area compared with what the B-125 offers.

Compaq (PDA) 3600

From Intel Corp.

<http://www.compaq.com>

Suggested retail price: \$200

- 12 MB onboard memory
- MMC slot or up to six 1.44-MB disk floppies
- 120x120 resolution
- For external memory (disk) is
- 12 MB slot or up to six 1.44-MB disk floppies
- Full-color screen (120x120 resolution)
- Internal port
- Headphone jack, built-in microphone
- Compatible with Windows 95/NT/2000



Though it uses the same operating system and has many of the same basic functions as other Pocket PC devices, the PDA 3600's design—of all of the ones reviewed, none

here quite the carry, futuristic design of the PDA, which is stronger than most other Pocket PC devices.

Because of that design, the PDA has a lot less onboard than some of its competitors. Notably, it lacks a jog dial for scrolling and selecting and has no built-in external memory slot. It's easy enough to add to the device, though. Compaq offers optional "jackets" that wrap around the back of the PDA, adding a PC Card slot (PDA for a single, \$199 for a double-slot model), a CompactFlash slot (\$179), or others. Our test unit came with a PC Card jacket supplied with a Sierra Wireless AirCard (PDA Wireless.com) model (PDA-950) for mobile Internet access, which worked just fine.

Continued on page 42

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North vs. south

Were advised by some photo enthusiasts that the direction the papers were sent into the printer (i.e., "north" and up "south" and left) affected print quality, so did

printing in landscape versus portrait orientation. We were also told that papers and ink combinations add difficulty to gray-level analysis. After the tests it can be concluded fairly definitively that only the last statement is true—all brand papers and ink combinations vary in their

acceptability to simulating by gray levels. As for north-south orientation, in our tests with four different papers, there was no notable difference between feeding the paper in north-south vs. south-north. Obviously, there was no discernible difference

when the same test image was printed and so, perhaps, their landscape orientation. So paper starts just here to concentrate on getting the density at north side up and then prints should be just fine. —Stephen Savoy

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Paper, ink, and quality

Continued from page 48

debate—especially in the digital option arena where you can control a lot of the look of the final print with image editors like Photoshop, PaintShop and Paint Shop Pro.

With these paper and ink options, the digital darkness is at last coming out into the light of desktop image development. □

Stephen Savoy is a writer and photographer. He can be reached at stephen@stephen.ca.

References:

- For those who want the very best specialty paper and archival info: <http://www.digitallabprint.com>
- The last word on archival papers and info: <http://www.archival.com>
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Palm Portable Keyboard

From Palm Inc.

<http://www.palm.com>

Suggested retail price: \$100

If you like the Palm series of handhelds, but really can't stand the idea of entering all your data with a series of touchscreens, welcome to the club. Thankfully, there is a way around it using one of the portable keyboards available for Palm devices.

The portable key board available from Palm is a fairly thin affair when it is on, but it folds up into a shape that's about twice as thick as the Palm itself. The Palm device attaches to the keyboard through the serial connector



at the bottom of the PDA. The Palm device is held in place by a support that slides out from the rear of the keyboard.

The keyboard snaps shut into a protective plastic shell, but also comes with a zip-up software carrying case if you must take more protection. The only thing to watch out for is to make sure you get the version of the key board made for the specific Palm model you are using, or the interface will be wrong.

—Steve Conroy

Another view of the tablet PC

actioned from Page 30
 (1.5 in.), has a 21.5-in. (54.7 cm) LCD, Intel Pentium 4 processor, and weighs just under 3 lbs. (1.3 kg). An optional 1080-tyre tablet is available that doubles as a stand if you want to use the device like a PC on your desktop. The ViewPad 1000 is expected to retail for about \$1,600—more than twice the cost of the pocket-size ViewPad 500, but with four times the screen space.

There's something more powerful may seem: the ViewPad 1000 tablet PC, which comes with a full Windows XP operating system (and no longer needs a full boot-up when you turn it on). The ViewPad 1000 also has a 3.5-in. hard drive, 128 MB of memory, and an 800-MHz processor. It's 30.4-in. screen (76.9 cm) resolution can be viewed in portrait or landscape mode.

In addition to the PC Card slot, the ViewPad 1000 has two USB ports, VGA out, infrared, a built-in 3.5-in. floppy drive, and a built-in 128-MHz cache. It ships with a built-in rechargeable lithium-ion battery and a 640x480-



resolution digital camera built into the case for use with video conferencing software like

Microsoft's NetMeeting, which is included.

The ViewPad 1000 is a full tablet, at 12.1 in. (30.7 cm), has a slightly larger footprint, at 11.5x10.5 in. (29.2x26.7 cm), and weighs in at 3.8 kg (8.4 lb.). An optional docking station is also available for those who want to use it as a desktop PC replacement. The price point is expected to be about \$2,700. Future systems will likely ship with Windows XP, which is expected to be another benefit for those looking to upgrade.

The ViewPad 1000 should be available by the time you read this, and the ViewPad 500 is expected to ship by the end of September. Both come with a one-year warranty.

The sixty-gitty

ViewPoint's decision to enter a market that other companies have been playing in without much payback is interesting. It might, for example, no longer providing one-based computing products in Canada and the late of Apple's Technology (makers of the iMac G4) is unclear at the time of writing. Still, others offering tablet-style devices in other markets haven't brought them to Canada yet. So, who gets the

first market shot?

According to Ben Orfan, ViewPoint's general manager of advanced technologies, the company's 1000 series were being customized by the technology currently available—the device itself: small, screen, on-panel control devices. Because ViewPoint specializes in display technology, it felt it was in a good position to address this. As well, the company already has a fairly wide reach into the retail channel, which is often overlooked. It can leverage to bring the ViewPad line to a larger group of customers.

Through the ViewPad models adopt about out there by other manufacturers, ViewPoint has tapped them up with extra, like 800-MHz networking and CD slots, and has reduced the size and weight of its devices. The slaking point will probably be the price, which is similar to that of value-oriented notebook PCs, and more than twice that of the smaller Pocket PC devices.

It will be interesting to see if consumers have an appetite for larger, full-sized PCs or whether they opt instead for full-sized notebooks. □

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Digital meetings

Now that powerful PCs and high-speed Internet are commonplace, the cost and time savings of virtual gatherings are within reach of smaller enterprises

By Tom Iversen

While there is no real replacement for the traditional meeting—sitting across from one another, seeing their expressions as you make your presentation—new technologies, more powerful PCs and increased bandwidth are combining to make digital meetings a very acceptable substitute. Add to that, the money and time saved when participants are not required to travel to a meeting location and you can expect to see more organizations gathering executives around the virtual boardroom table.

According to a study done by the Boston, Mass.-based Module Research Technologies Inc. (<http://www.mrtech.com>), more than two-thirds of the workers surveyed said they had engaged in some kind of virtual or digital meeting, with nearly half saying they participate in a virtual meeting at least once a week, a third percent saying they expect to be meeting online as regular part of their job in the next five years.

"The market for digital meetings is exploding as people begin to understand that they don't actually have to be in the same room to meet with others," says Stephen McWilliam, vice-president of marketing for the Toronto-based Autodesk Inc. (<http://www.autodesk.com>), a subsidiary of Autodesk Licensing. Autodesk's contribution to digital meetings is a Web-based solution that requires no special tools, software, or hardware to be installed on the client's side.

The Autodesk Conference Center operates as an application service provider (ASP) model—the customer signs up for the service, accessing it via any system with a standard Web browser, while Autodesk keeps the infrastructure costs low and software running smoothly.

The Conference Center, which was first deployed in February 1999, includes a scheduling wizard for setting up and running an online meeting, a life-to-value service for delivering documents for a meeting, and a real-time chat feature. There is also a set of "instantbots" that can be used to moderate or emotional reaction to suggestions or presentations made dur-



ing an online conference.

Perhaps the most important feature, however, is that it allows companies to share applications in real-time.

"We would be able to jump into a highly collaborative environment and make changes in the documents, says McWilliam. "And all of this can be done without the usual

drawbacks of sending back and forth the changes we unfortunately have made and have communicating to the client these changes."

Also, the applications selected can be viewed and worked on by selected members of the online meeting.

Users can also take polls or polls on a host through a Web site, displaying and clicking through pages that are used in other conference parts.

Minutes of a conference can be made using either a built-in Notes feature or the Presentation Broadcasting feature.

Autodesk is certainly not alone in occupying the market for digital meeting solutions. Microsoft View Grid, based PlaceWare Inc. (<http://www.placeware.com>) has been helping businesses conduct real-time meetings and conferences since the Web since 1995. PlaceWare's own Conference Center offering spans out of work days in the U.S. and since 1998. The company says it now has more than 1,500 registered clients who, combined, have logged more than two million online meeting hours.

Like Autodesk's service, clients do not have to download any software to use PlaceWare's Conference Center 2000. The one requirement for accessing the server is a system running a standard Web browser.

Conference Center 2000 also allows for online chatting, application sharing, and real-time Web tools. It offers tight integration with Microsoft Outlook 2000, as well as allowing participants to screen and share PowerPoint, spreadsheets, and a relational database. Forthright Bentley, senior public relations manager with PlaceWare, notes that some of the company's clients use Conference Center 2000 for issues such as digital meetings.

"We've seen companies use it to do things like Web-based seminars, virtual trade shows, product launches, customer parties, and employee training, and some are even using it to conduct corporate communications activities [such as press conferences]," Bentley adds. "Because of the high-tech screen are using it as a sales tool so they can show people an application running in real-time or to collaborate and work together in real-time on a problem."

Rowebots helps users setup and run meetings

10/26/00—With software that combines elements of online collaboration and knowledge management, Rowebots Inc. (<http://www.rowebots.com>), aims to make meetings more effective.

In Canada/Canada, held in Toronto, July 11, Dr. Rowebots introduced Meeting 2000, Web-based software that works with Microsoft's Outlook personal information management and email software. Expected to be available just after 1/2 year to go, the software will be for this [phone is an additional fee] request, which is optional, said Ron Rowe, founder and president of Rowebots.

Meeting 2000 provides the tools to set up an agenda for a meeting and attach documents, presentations, and other files related to the meeting.

The material can be sent out as a single package to meeting participants. Outlook users receive the materials in rich-text format, while others will get simple text, Rowe said.

When the meeting takes place, the software can be used to manage progress through the agenda, keep track of time spent on each item, mark targeted tasks, set a timer to light time spent on it, or set a timer to light time spent on it, or set a timer to light time spent on it, or set a timer to light time spent on it.

Users can also use the software to set up a meeting agenda and attach documents, presentations, and other files related to the meeting.

The software can also be used to manage progress through the agenda, keep track of time spent on each item, mark targeted tasks, set a timer to light time spent on it, or set a timer to light time spent on it, or set a timer to light time spent on it.

Rowe said he conceived the idea of the software while running another company that he has since sold. The project to meet developing it came during one particular meeting with a number of high-level people from a major company where there was no clear agenda and the discussion drifted, Rowe said.

"That really convinced me that maybe this

needed a better look," he said.

Meeting 2000 is designed to make meetings more structured and thus more effective, said Rowe, who commented that knowledge workers spend between 31 and 45 percent of their time in meetings and much of that time is not used effectively.

Rowebots has its headquarters and development operations in Ottawa and its sales and marketing office in Glenborough, N.Y. The company plans several companion products to Meeting 2000 during the coming year, Rowe said.

—Jasperette

Because of the flexibility of the solution, PlaceWare's client list includes a growing number of small and mid-sized businesses. Another attraction for small businesses is the money they can save by holding meetings online—instead of a significant portion of their workforce is mobile, spread out geographically, or working from home.

"When you think about the average ticket price to fly somewhere in the U.S. alone, it is anywhere between US\$300-\$400 for a roundtrip ticket so right there you can see a savings," Ramsey says. "PlaceWare gives you access to the service [around the clock] from anywhere and you can't afford to forget the savings you're getting by not having to rent a car, hotel, and the time lost by travel."

Analyst's McWilliam predicts that with the recent downturn in the high-tech sector and general slowing of the economy, Web-based meetings will only become more popular.

"With any economic downturn, the first thing to get whacked are travel budgets and training budgets," he adds.

Certainly the low cost of these solutions—relative to travel expenses—is compelling. Amazon charges a flat rate of \$30 per participant for a conference, with a 10-percentage surcharge. For an annual fee of \$500 per user, a company can set up an online virtual boardroom that can be used at anytime.

"What many people do on the small to medium enterprise side is that they have that perpetual requirement to that if 5 a.m. the sales team has a meeting and then at 10 a.m. the finance team uses the same conference to do its sales meeting," McWilliam says.

For Conference Room 360®, PlaceWare charges an initial set-up fee of US\$3,000, then US\$500 per year for each online seat, which can be used by anyone at anytime.

WorldCom Conferencing also offers a Web-based service, Net Conferencing (http://www.conferencing.com/), which allows users to meet, share, and collaborate on documents via a Web browser during a standard conference call. Net Conferencing tools include chat sessions, use of interactive Web pages, Web-based polling, and a reply button so these tools are available even over a presentation later.

"Cost is a primary part of the consideration and is often the first reason companies go for using these services," says Neal Lufkin, senior manager of marketing and communications for WorldCom Conferencing in Chicago, Ill. "But cost savings is not the only reason. There are huge productivity gains to be had including the convenience factor, the improved speed of communications. And then there are the personal considerations—the small meeting might just be getting a little less busy."

Creative uses for chat, messaging

While ASP-type solutions are cheap relative to the total cost of travel, there are several other techniques that can be used to reduce real-time meetings at a fraction of the cost. Chat and messaging software, in particular, is being used creatively by some companies to gather employees around servers at headquarters.

"I can only speak for my friends and acquaintances, but we all found that it is a lot easier and quicker to communicate using Messenger instead of waiting for fax or to go

through email," says Bob Dutton, associate public relations manager for Yahoo! Inc. (http://www.yahoo.com) in Toronto. "I think one of the best people are using Messenger is to send files from your desktop to another so that one can quickly share that person what you are doing and what you are talking about. It's certainly better than waiting for that email."

Yahoo! Messenger is available free from

http://messenger.yahoo.com. Because it is attracting more business users, Dutton says, Yahoo! has added features to make it more business-friendly, including the ability to add contact information and a new feature so that sessions can be archived.

Recently, Yahoo! announced it would also be adding Webcam support to Messenger, giving users an inexpensive videoconference.

ing options. Messenger will be able to detect whether other members of a badly lost host Webcam. Users will also be able to prove a Webcam broadcast is content what is seen, which is useful if a videoconference participant wants to build a product, for example, and have that image viewed by everyone.

Messenger is likely to become a more pop-

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Platform News

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Red Hat 7.1 Linux: Part 2

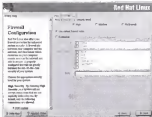
Improvements for administrators

By Gene Williams

Corporate server administrators will be pleased to see that Red Hat 7.1 offers two advanced authentication options: Kerberos and LDAP (lightweight access directory protocol). This play will take the enterprise as Linux moves toward state-of-the-art authentication protocols.

Red Hat Linux 7.1

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Red Hat 7.1 lightens up its default set of the two services and firewall features, now allowing users to set up a default firewall from the get-go.

For those of us who switch frequently between Linux distributions, it is heartening to see that Red Hat is beginning to adhere more closely to the evolving Linux FHS (Filesystem hierarchy standard) specification. Apache 2.0, for instance, are now being placed in `/usr/sbin` rather than `/usr/local/bin`. You can now find

service installation scripts as `/etc/rc.d` rather than `/etc/rc.d/init.d`. Other backward-compatibility symbols allow you to use both. The documentation files in `/usr/doc` have been moved to `/usr/share/doc`. Debian users will feel at home with the new layout.

One of the longstanding knicks on Red

hat is particularly its practice of opening up all kinds of services by default. In the hands of an inexperienced administrator who didn't know how to lock down a system, it made Red Hat seem sitting ducks to hackers.

In a significant move, and one to be highly applauded, Red Hat has tightened up its default out-of-the-box services and firewall features. You now have to manually turn on the services you want to use. Good move!

The install allows you to set up a default firewall right from the get-go. Post-install, basic installation of services such as `iptables` and `ipsec` are done by editing files as referenced in `/etc/sysconfig`. Sendmail, by default, will not accept mail from other systems. It must be explicitly turned first.

Several of the Red Hat admin tools have been updated, and, in some cases, removed. Interestingly the `hwconf` tool is no longer

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Apple News

OS 10.1 not iMac big news at MacWorld N.Y.

By Justin Sizemore

Never has a MacWorld keynote been more disappointing than Apple chairman Steve Jobs' address at New York on July 16—but then again, rarely have our hopes been so high. He usually goes in with few expectations and we know just what to expect. Steve Jobs' return to the Apple stage, however, it seems that we expect each time to surpass the previous, which inevitably results in a letdown, like the one in July.

Leading up to MacWorld New York, expectations were high for a new Mac that would break out of the three-year-old gaudy look. It's up



PowerMac G4 gets more power

to a G4 to replace the failed Graphics Power Mac, and Mac OS 9.2.2 as well as some sort of update to OS X. Instead, we got the same old Mac: a bit faster and a bit more expensive, too. The new G4s have some minor changes, too.

Continued on page 60

Windows XP: Part 1

A close inspection of new system's architecture and plumbing

By Maurten Heileman

I cannot have been so long ago that I sat on my grandfather's knee and listened to his stories about installing Microsoft Windows 1.0 in the decade called the 70s. Apparently, it was quite an adventure, even if we don't include the story about the risk to the software store in a monsoon.

My monochrome computer (I think she called it an XP) with a 40KB of RAM didn't have a hard drive or a CD-ROM drive, and Windows came on its "floppy" disks that the mom contained 30KB of data. His computer had two drives for these disks, and the quest to retrieve what the small programs were and were used is finally resolved.

In retrospect, she says, it wasn't worth the effort. In those days, there wasn't even a Microsoft version of Word that would run on Windows and in the meanwhile it, there was

only one Windows application you could buy—a drawing program. So short of you could use it to play with Word and Paint, as well as a few utility programs like a calculator. I asked her why she had bothered to work without so few little tricks, and she said what digital troubleshooters always say, "It seemed so nice, and I wanted to see what it was like."

Experimentation, or the thrill of the new, will likely not be reasons to get Windows XP when it is released in October. Our dependence on Windows, like our dependence on electricity, has reached lightning's proportions. So, the first of these articles about Windows XP, we'll pull back the curtain to see what's really going on, focusing on enhancements to the end user experience.

Although the update is not revolutionary, there are some significant technological developments. Microsoft's Windows XP features

graphics include technology, and even developers' OS and IT administration tools, now over 173 pages. These are the details that support the pronounced hype of Microsoft's XP Web site (<http://www.microsoft.com/windows>).

The browser range from the trivial to the significant and the pages contain many more juicy details about stuff that you can see and play with, but the real substance comes in the description of technologies in the underlying code that makes it simpler for developers to create advanced software.

Take TV, for example. Although the WinTV for Windows client software is not part of Windows XP, the supporting software architecture exposed by TV applications has undergone a dramatic transformation, with two new elements called the Broadcast Driver Architecture (BDA) and the Video Mixing Renderer (VMR). The BDA provides

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Processor Wars

for the latest installment see Page 68

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Windows XP: Part I

Continued from page 38

support for new technologies like digital broadcast and program guide storage while the VMGS contains improvements for video overlays. These features will enable a new generation of more powerful TV applications from third-party developers like MGI,

AOL, and Motorola, but for the moment there's really nothing to see at these and several other new displays.

When XP is released, you will be able to see, at a least impression, the more than 100 features listed as improvements to the real user experience. These range from the relatively minor, such as opening multiple

instances of 3Dx windows to the truly new ones because the drag-and-drop CD burning and the integrated personal firewall (which will be the focus of Windows XP Part II).

For users of Windows 2000, XP is an incremental upgrade for the rest of us, often totally by new operating systems. The code base that Microsoft has extended again and again since

it first started to integrate 32-bit code into Windows 3.2 is finally reflecting its well-deserved position. Although Windows XP eventually eliminated "real-mode" (16-bit) mode of support for the MASM memory system in the last 386 processor, the dangerous and unstable architecture is now officially extinct.

This will not completely eliminate the crashed applications or the hang operation, but it is one of the steps that adds stability to XP. Windows 95, 98, and ME users may have to break themselves of their daily ritual of use to recover lost memory or reset system resources. And, if an application becomes "non-responsive," you'll be able to abort, reset, and even close the window.

In order to provide compatibility for those old 386 apps our grandparents can't let go, there is a real-mode emulator. And there's a Windows 95 emulator to run your parents' old favorites. When they run on incompatible old programs, they'll see a warning that offers to install that program as Windows 95-compatibility mode.

Windows XP users can expect a higher level of reliability from hardware devices because of the new driver signing system. In addition to warnings when you attempt to install a non-certified device, drivers that are known to crash or hang are blocked on installation and on loading.

Windows XP also has mechanisms to deal with developers have referred to as "DLL Hell." This situation occurs when two applications require different versions of the same dynamic link library (DLL) file. A new feature in Windows XP scans and manages multiple versions of the same DLL and provides each application with the correct version.

The ability for multiple users to maintain individual settings on a single computer system has been improved. The most significant enhancement is the capability Microsoft refers to as Fast User Switching (FUS). It allows several users to be logged in at the same time and to switch from one user to another without requiring the first user to close applications and log out. Although this may stretch the resources of current systems to the max, faster processing and more RAM may eventually make this a useful and interesting capability.

Another new capability provides a way to allow a remote user to log on to your system. Besides the doc article will likely be on the moving end of that feature, as our problem grows friends and others need to support machines. When you respond to the request, you'll be able to chat, transfer files, and take control of their system to identify and fix problems. Remote support sessions can be initiated through Microsoft Messenger or via email. For security reasons, sessions must have an expiry time.

There are some technical changes that improve display quality. Although originally designed to improve usability on laptop or LCD screens, to my eyes the ClearType display setting makes text look sharper and clearer even on my standard CRT monitor. You'll also be able to take advantage of a new generation of high-resolution 150 dpi (dot per inch) displays that will be appearing soon.

Windows XP includes both the RNT and

Continued on page 94

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WINDOWS NEWS

Windows XP: Part I

Continued from page 42

NTFS file systems for hard disks, and the later versions of the DVD file system (UDF 2.0), which includes support for DVD-RAM and DVD-RW.

Individual users will be making a choice between the Home and the Professional versions of Windows XP. Microsoft is promoting support pricing XP Home as the upgrade for Windows 98 and Me users, and XP Pro for NT and Windows 2000. That's a little bit of an oversimplification, and although the upgrade decision is the topic of the third article in this series, there are some technology considerations that will be part of the decision-making process.

Two hardware factors may dictate your selection. Only XP Pro will be able to take advantage of systems with two or more processors. In addition, the 64-bit edition of XP will only be available as the Pro version. If an Intel Itanium processor is in your present computer, you'll need to go for Pro. Although for the moment dual or tri-processor systems are considered to be workstation level, they will both migrate quickly to desktop systems.

Pro also Recreating File System (RFS) support for NTFS volumes. RFS, introduced in Windows 2000, is integrated into the operating system and provides security against users in protected drives and files through other operating systems.

Although the basic System Restore functionality, introduced in Windows Me, is included in XP Home, the advanced Automated System Recovery and Backup functionality is only available in the Pro release.

XP Pro incorporates all of the support, connectivity and security features required for business class networking, including

Active Directory Domain, DHCP, and IPsec. XP Home includes everything you need for home networking, including Internet Connection Sharing.

Incidentally, although you may have read or heard that Microsoft would not include multiple monitor support in XP Home, it changed its mind in June. XP will now support multiple monitor systems, just as both Windows Me and Windows 2K do.

Finally if you are planning to upgrade the XP Home upgrade will not run on Windows NT or 2000 systems.

It would be happy not to discuss the product activation. Later, although it certainly does nothing to improve the computing experience, you will have to activate Windows XP within 30 days of installation or it will stop booting. You don't have to give any personal information or register, just provide the license key on the CD container unless it even the phone. Here explains that some with Windows XP installed will probably already be activated.

Activation is Microsoft's attempt to enforce its license and thwart the theft of its intellectual property. Much of the sharing I've read comes to come from users who are unwilling to accept the licensing provisions that they agreed to when they installed Windows. Whether it's Napster or a friend who says, "I have a copy you can borrow," I don't support theft. I'm hoping that legitimate users who act within the license will not be affected, but it's a nice idea to do it.

Master is the national leader Windows XP Monthly published by IDC and has been using XP since last September to produce market analysis at IDC. Software and system cost and use is measured by IDC.

E-book not a book by any other name, U.S. court rules

WASHINGTON, D.C.—A federal judge in New York said that publishers cannot prevent authors from republishing (and reselling) their books or electronic form, even if the publishers own the print rights to the books in question.

In early July Judge Spitzer told authors to raise an objection against fledgling e-book publisher ReaxBooks that would have prevented the company from publishing its electronic form and for its ReaxBooks has approached any other ReaxBooks authors.

Sending the injunction was publishing giant Random House, which owns the print rights to the novels named in the complaint. Random House had asked the court to prevent ReaxBooks from publishing the titles in electronic form and for its ReaxBooks has approached any other ReaxBooks authors.

"I've argued ReaxBooks, which has made no investment in developing and promoting the literary properties, limited and unfair only in print rights are the maximum Random House has made. Random only in time is 40-gallon barrel," Random House wrote in its complaint.

But then rejected that argument, saying that ReaxBooks was within its legal rights when it contacted with the authors to publish their works in a book form.

"This court finds that the most reasonable interpretation of the grant in the contracts of issue to 'print, publish and sell the work in book form' does not include the right to publish the work as an e-book," Spitzer wrote in his decision.

Spitzer not only rejected Random House's request for a temporary injunction, he also said that the company was "not likely to succeed" in its large complaint of copyright infringement against ReaxBooks.

Spitzer's decision follows close on the heels of the U.S. Supreme Court's ruling in another major dispute between publishers and writers over electronic publishing.

In *Grain v. New York Times*, the high court ruled that Random House has a right to be paid when their works are made to appear in electronic databases or on the Internet. ReaxBooks' archive of documents for the case was at <http://www.reaxbooks.com/legal.htm>.

—Andrew Bly

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What's old is new again

Return of the Pentium III

By Sean Connolly

Just when you thought the Pentium III was a thing of the past, out comes a new model. Intel Corp. has just unveiled a 1.2 GHz version of the Pentium III processor, the first update to the processor since the scaled 1.3 GHz version (revealed shortly after its release, nearly one year prior to the announcement of the 1.3 GHz model). The new Pentium III processor, also known as the Tualatin, makes use of the new 0.13-micron fabrication process, and will ship with 32 KB of Level-1 cache and 256 KB of Level-2 cache. The timing is interesting, too, as the launch of the 1.4 GHz Pentium 4 processor, and

after a one-year absence of any new Pentium III processors, Intel has sent a lot of mixed messages to consumers: the publicity that the Pentium III is the way to go first sales have been somewhat underwhelming. Part of this can probably be attributed to the fact that the Pentium 4, while performing extremely well in the world of multimedia and gaming, has consistently turned in mediocre performance in the world of standard desktop and business applications. We're backed up with our own benchmarking results, showing the Pentium 4 lagging behind the Athlon in office productivity applications. Even more troubling, the 1.4 GHz Pentium III outperformed the

1.5 GHz Pentium 4 in our benchmarking.

In our report, data analysts are not agreeing. Even though Intel targets it at both consumers and business, the Pentium 4—and has always been—most strongly marketed to those interested in increased multimedia performance. It also true that not a lot of applications have yet adopted support for the Pentium 4's SSE2 multimedia extensions. The fact still remains, though, that SSE2 optimization will only go as far toward increasing performance in business applications, because most of those optimizations will be for the multimedia components, an area in which the Pentium 4 already does fairly well.

When it comes to business application performance, Intel has been putting more focus on the Pentium and Xeon chips, but those chips are not aimed at the workstation/server market and are more expensive choices. The release of a later Pentium III, then, may be perceived as an attempt to bring back business users who were drifting off toward AMD's cheaper and higher performance Athlon processor, or at the very least, an attempt to reassure those users that they aren't being abandoned.

In truth, though, the new processor is already being aimed at the mobile market. The Tualatin-core Pentium IIIs are of the smaller fabrication process, coupled with a lower core voltage and a smaller die than the Pentium 4, making this processor a better choice for those looking for high performance in a more mobile environment. While it's expected that the Tualatin will appear in some full-size desktop lines, it's likely that it will eventually move toward notebook or ultra-compact desktop models.

The new Pentium III

The sample we received was shipped, presented in one of Intel's new 8130-shrunk motherboard, the D9130A2. Though it fits into the Socket 370 processor interface because of the new 0.13-micron manufacturing process, the 8130 version of the Pentium III will be incompatible with the majority of existing Socket 370 boards.

The notable thing about this configuration is that it uses SDRAM for memory, but just the single data rate version. This will allow you to run the 1.2 GHz version of the Pentium III on a 133 MHz front-side bus or new, though this is bound to change in one

motherboard to be more available with DDR support, as well as support for the Q133-memory bus.

Pentium III vs. Pentium 4

Of course, the question to be answered now is, how does the Pentium III perform? We put together two test benches for comparing the performance of the latest processors in both the Pentium III and Pentium 4 line.

The Pentium 4 bench is the one we used before, consisting the Intel D940GB motherboard, 256 MB of PC800 SDRAM from Kingston (www.kingston.com), an NVIDIA GeForce FX 50 graphics card with 64 MB of DDR memory, a Sound Blaster Live! audio card, and a 40-GB ATA-100 hard drive. The hard drive was set up with two partitions, one running Windows 98 SE, and the other running Windows 2000 Professional. This time we used the 1.2 GHz and 1.4 GHz Pentium 4 processors.

The Pentium III system included the above-mentioned D9130A2 motherboard, 256 MB of PC133 SDRAM, an NVIDIA GeForce FX 50 graphics card with 64 MB of DDR memory, the aforementioned NVIDIA AC97 audio component, and a 40-GB hard drive. Again, the hard drive was split into two partitions, one running Windows 98 SE, and the other running Windows 2000.

We benchmarked both systems using SPECint_RateBase2000 suite, which runs several applications at the same time in a similar manner to a real-world environment.

For comparison, we have included benchmark results from our AMD Athlon-based test bench. This system includes a Sapphire RA-300 motherboard, 256 MB of PC1333 DDR memory, an NVIDIA GeForce FX 50 graphics card with 64 MB of DDR memory, the motherboard's AC97 audio component, and a 40-GB ATA-100 hard drive. The hard drive was split into Windows 98 and Windows 2000 partitions.

A quick look at the results (see chart) reveals lower performance at 2000 for the 1.2 GHz Pentium III chips (but that's not surprising). On the office productivity side, it helps, as we saw fairly well, roughly 16 percent behind the latest Pentium 4 under Windows 2000, 14 percent for Windows 98. The Internet content creation section is a different story with the Pentium 4 sporting over a 10% lead.

Continued on page 58

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Online & Connected

Internet Trends • Wired and Wireless • Online Services • Work & Play on the Web

Art online

Some Canadian galleries find success hanging up their paintings in cyberspace

By Neil Fahn

The vibrant colours, the intricate details of the brush strokes, or the contrast of hand-crafted sculptures—these sensory delights are omitted in the experience of visiting an art gallery. They are also the same experience that are difficult to recreate online.

Despite this, many Canadian galleries and art dealers are showing their wares on the Internet. Some Canadian galleries that in 1998, purchased of Canadian art, are now selling just over \$500,000 online. Many in the art world are looking to the Web as a way to increase that number.

Some galleries and dealers have used the online medium as a marketing and promotional tool to complement their brick-and-mortar operations. Others have leap into cyberspace full force, offering their art exclusively on computer screens.

ArtCanada.com launched in September 2003, is one such dealer. The site boasts an



inventory of more than 54 million of art ranging from paintings by members of the Group of Seven, to works from contemporary Canadian artists. And the art is selling.

"Just this weekend, someone bought four

different pieces from us, four very different artists," says Karen White, a spokesperson for the company.

The site that the largest sale so far was a \$44,000 original piece by Donald M. Fletcher, called *Beachside* (Laurie Miller Island). While even the art's success can be traced to its ability to showcase a wider selection of work than could be contained in a traditional gallery, as well as offering the convenience of online shopping.

"An online gallery allows you to sit at home in your PJs with a coffee, and sort through images. This is especially helpful to people who don't have the time to, or want to, [visit an art] gallery."

Offering art online can also make it easier for buyers of a specific type of work to locate pieces, according to Susan Goldfarb, co-owner of Aboriginal Galleries (<http://www.aboriginalart.com>). The virtual gallery, which specializes in Native Canadian art, was launched in 1998.

Continued on page 73

One in five connected kids solicited online, study says

Canadian MPs fail to pass cyber-safety amendment before summer recess

By Neil Fahn

Twenty percent of children who use the Internet regularly have been solicited to online sexual advances, says a recently released study.

The study, published in the June 20 issue of the *Journal of the American Medical Association (JAMA)*, found that 19 percent of children aged 10-17 who use the Internet at least once a month have been the target of at least one suggested sexual solicitation in the past year.

The study defined solicitation as requests to engage in sexual activities or conversations, or to give personal sexual information.

Additionally, three percent of those polled reported being the subject of an aggressive solicitation, where the sexual predator made attempts to contact the youth offline.

While most of the children said they had actually been sexually assaulted by contacts made over the Internet, the study's authors suggested that these statistics show the dangers associated with online sex by children.

Though the researchers studied American children, the global reach of the Internet suggests Canadian youth face risks on a similar scale.

A survey released in May by the Media Awareness Network (<http://www.mediawareness.ca>) revealed that more than 90 per cent of Canadian kids are using programs on chat rooms, and 75 per cent of those children frequent newswebsites that monitor.

In an effort to combat the threat of online sexual predators, the Canadian government introduced in Strategy to Promote Safe, Wise and Responsible Internet Use earlier this year.

As part of the plan, Justice Minister Anne McLellan called changes to the Criminal Code that would lead to all forms of between 16 and 18 years for attempting to lure minors over the Internet, searching, or disseminating child porn.

But the government failed to pass the changes before Parliament recessed June 13, after opposition members objected to other proposed Criminal Code amendments.

Continued on page 72

Wearing your own Web site

Dynamic Web pages using PHP: Part 2

By Keith Schwab-Babcock

In the previous article, we looked at some of the basics of PHP where to get it, set it up, and use it on a Web server, and used a couple of very simple examples. This month, we'll delve more deeply into how PHP can help you build dynamic Web sites, adding in the creation and maintenance of virtual navigation elements on your site and how to control which display levels visitors can view.

Include statements for header files

Unless you are happy on your Web site, chances are that you found adding content elements like navigation bars and columns to each of the pages on your Web site. With PHP, you may often dynamic Web development language like ASP or ColdFusion, you can control place all of your common navigation elements within a header, and then "pull" them from within the individual Web pages that comprise your site. This method offers a couple of major advantages over inserting the same static HTML code into all of the pages of your site:

- Since all of your Web pages are calling a single header file, you can be sure they are consistent and contain the same info and links across all of the pages of your site.
- If you make a change to that header file, it will automatically be reflected across all of the pages that call upon it.

To do this, create a header file that contains the universal navigation elements for your site, as in the following:

```
<DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
```

```
<head>
<title>
<meta http-equiv="Content-Type" content="text/html">
```

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<body>
<div id="header">
<div id="left">
<div id="right">
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Continued on page 74

Art online

(Continued from page 79)

"I'd been involved with Inuit art for a number of years in retail and I realized that there were collectors across the world [who] were limited to adding to their collections during visits to Toronto, Vancouver and Montreal," Griffiths says.

"He estimates that Allanorport's Galleries' sales after its second year were equivalent to some traditional galleries' figures after years in business.

"I'd been involved with Inuit art for a number of years... and I realized that there were collectors across the world [who] were limited to adding to their collections during visits to Toronto, Vancouver and Montreal."

—Simon Griffiths
Allanorport Galleries

Absence of retail space and other overhead costs allows Griffiths to offer prices at costs much lower than he could in a traditional gallery, and that coupled with a return policy on purchases allows him to offer discounts to buy later for the consumer.

Despite the benefits, selling an online site isn't all smooth sailing, according to Dennis Turnbull, of MarketingProfs.com.

Turnbull started the site in November as a way to increase exposure and sales for artists in Nelson, B.C. The site has had about 10,000 hits since opening, yet only a few sales have translated into purchases.

"Sales have been slow," Turnbull says. "They're certainly not what I expected them to be. After running several months and most of our artists are 'regretably known'."

Turnbull points to his marketing with the artists and their work as a critical to the site's challenges sales. He says that "a conclusion [is only] recently reached" and has changed his business model to change the artists, as he now works on marketing their own work.

"The fun is in making it a search tool and people will only buy if the name is familiar, whether it's a first purchase or an artist," he says. "Instead of looking at the Internet as a tool for artists to make money, we need to look at it as a marketing tool. Most people aren't at the buying stage yet."

As will face details of work, do not reproduce well on a computer screen, which may make art lovers wary of purchasing something they've only viewed through a Web browser, he says.

To combat this, Turnbull has located her artists on various designers and local corporations, who allow her art to match a colour scheme at an office or building.

At least for now, Turnbull says, Internet art

will exist to drive sales rather than the way to drive the message of an art and technology is here, to stay.

"Online art exhibitions is exciting. At least, people get a little taste before buying online, they'll buy the unfamiliar items as well as the familiar. The success of eBay shows that people are willing to take risks."

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One in five connected kids surfed online
Continued from page 39
Between and internet-ready lines, which were packaged together with the Internet service as well as DSL C-15.

Only 10 percent of incidents reported
The ISMA study further indicated that just

10 percent of sexual solicitations were reported to authorities, and that half to three-quarters of those parents and children use large screen displays in places where they could report unwanted online activity.

Internet use lines exist as a number of countries—including the National Center for Missing and Exploited Children's Cyber

TipLine (<http://www.missingkids.com/ncc/tp>) in the U.S.—but the study's authors suggest these services "should be more widely advertised and reporting should be made easier, more immediate, and more important to young Internet users."

Canada does not yet have a national tip line, though the government is looking at the

possibility of starting one up as part of its Internet safety strategy.

In addition, Manitoba has announced that it intends to launch the first province to start its own tip line, which it hopes to have running in the coming months.

But Tallon, an education specialist with the Media Awareness Network, said the government does need to play a role in creating a safe cyber environment for children. But, she added, the same shouldn't be placed entirely on elected officials.

"Legislation is important, but it needs to be part of the bigger picture," said Tallon. "If the legislation is passed, there will still be tremendous work to be done to educate parents at the grassroots level."

Tallon said research done by her organization shows that the majority of parents are largely unaware of what their kids are actually doing online.

Most parents believe their children are using the Internet mainly for research purposes, despite the popularity of instant messaging.

"Kids don't look at the Net as kids do," she said. "Very few adults go in chat rooms or use instant messaging. These things are really a part of youth culture."

She suggested there are a few things parents should do to maximize their children's risk of exposure to objectionable content.

Placing the computer in a well-travelled part of the house allows for unsupervised monitoring of kids' surfing habits.

Learning about the Internet and the issues surrounding it helps parents understand the reality of youth Internet use.

And most importantly, being open to talking to children about issues like sexual material can steer kids away from seeking out such material on their own.

"It is important to remember that kids are more likely to encounter sexual predators in the real world than online, but even a small percentage [of connected online connections] shows the danger does exist," said Tallon. "So parents need to take a more active role in looking at how their kids are using the Net."

—CanadianComputers.com

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Net celebration a Real?

Continued from page 30
about it. The past Father's Day my sons brought me a CD writer.

I took it to be the way their mother and I and I helped the dad get on the scene when his hardware was in or was broken by the hard drive. Now I feel this was incorrectly advertised by IBM as it was faulty assembly, in both.

When contacted IBM in Toronto they suggested moving the hard drive down where it could have been in the first place. If course they were not prepared to do it. I would be interested in knowing when you press suggested this product did they get to the point of removing the cover? I would think twice about another gas stove from this source.

Steve Robinson

XP update: For that last one, it is just open each system to inspect the extent for assembly weakness and also to determine how much more can be available for expansion. We are not and that there was one 3.5-inch expansion bay on the IBM model is questionable. Dependability is other brands (single from 2001) (i.e. no extra bays) to prevent failure on 3.5-inch bays. (2)

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Federal government wins 31 domain names in WIPO decision

WASHINGTON, D.C.—The Canadian government has won 31 of 32 domain names it claimed were being held in bad faith by a Vancouver-based cybercruiser.

The World Intellectual Property Organization's (WIPO) domain name dispute resolution panel ruled that David Bedford, operating as DomainNames.com—and under the "persona" of David Bedford, spiritual entity designer and author David Bedford—would be forced to give up most of the names he held that were confusingly similar to Canadian government organizations' Web sites. Among the disputed names were Canadacouncil.com, Canadacustomers.com, Revolvegeneral.com, Canadawangnan.com, Cangetv.com, Canamuseum.com, Statisticcanada.com, TheRadioCanada.com and thegovernmentofcanada.com.

In its decision handed down in late June, WIPO's council ruled that Bedford could keep GovernmentCanada.org since the Canadian government stopped using that Web site in 1992. The government also calls itself the Government of Canada and the Gouvernement du Canada, both of which Bedford had registered with .com domains.

The Canadian government originally made its complaint on March 30, 2001.

Bedford had registered all the names with Netfury Inc., a network solutions firm in 1999 and 2000.

The government noted that it retains common-law trademark rights for the names of "its various departments, agencies and programs. In some cases, these trademarks are protected through legislative or administrative provisions." Bedford said that WIPO should rule that Canada was trying to "steal its domain name rights."

"Respondent concludes that complainant is acting in bad faith by trying to set a precedent with this case so that it can more easily obtain the countless domain names that it has been unable to register from the numerous individuals who have registered them," the decision noted. "Respondent also concludes that complainant is acting in bad faith by including in its each list, names that are vaguely or remotely similar to the names of its departments, agencies and programs."

The government pointed out that "In the earlier days of the Internet, it was the policy of the Government of Canada that the domains of all federal departments, agencies and programs would be registered in the .gov domain."

"The aim intended to promote federal identity on the Internet," it added. "Although well-intentioned, this policy did not protect the Government of Canada from cybercruisers, i.e., those who registered the names of federal departments, agencies and programs in other domains."

The government also complained that Bedford used the domains as automatic links to the domainnames.com Web site, where he offered the names for sale at prices ranging in the thousands of dollars, such as EnvironmentCanada.com for \$28,000 and CultureCanada.org for \$2,000.

Bedford did provide a disclaimer that said the sites were not related to actual Canadian government Web sites.

The government further complained that he started using one of the sites to redirect users to a site providing insider rights for children under the name of a so-called association whose acronym was a derogatory slang term that resulted in con-

plaints from Canadians who were concerned that the site was endorsed by the government.

Another link, the government said, presented an unclear signal, with a "Viquia and Viquipedia" under the title "The Page Is Empty/Empty?" Bedford refused to take \$300 for the names.

The government also said "telling the government that he wanted \$50,000 for each Bedford argued that the names 'are essential source of products or services used and places that are essential for protection by trademark laws.'"

A "consumer looking for a federal government

department, agency or program [is not] going to be misled into thinking that a site where someone is purporting to be 'Domain Names' or an 'Internet Museum' is an official site of any country's government," Bedford stated.

—Brenda Lee

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• ONLINE & CONNECTED •

PCP sparks privacy debate

WASHINGTON, D.C.—Although hailed by many as an important technological advance that will allow Internet users to exert more control over their personal data, the Platform for Privacy Preferences (P3P) remains a source of debate within the privacy community as some leaders question its usefulness in safeguarding consumers.

A report published last July by the Internet Law Journal (www.iwjournal.org), P3P—An Important Tool for Privacy, that debate is highlighted as authors "We Guld" argue that the tool may give consumers a false sense of security. Guld further claims that P3P should not be viewed by lawmakers as a substitute for federal Internet privacy regulations.

Internet Privacy Information Center (IPIC), which is active at www.ipic.org, registered counsel, Chris Hoadley, agrees with Guld.

"There is a strong argument to be made that P3P is actually intended to delay privacy legislation," Hoadley says. The rollout of P3P "may give [the U.S.] Congress an excuse not to legislate and may give consumers a false sense of security," he said.

Developed by the World Wide Web Consortium (W3C), active at www.w3.org, P3P allows consumers to plug their own preferences into the Internet browser. The software lets the browser automatically send Web site privacy policies, alerting consumers if they attempt to enter a site that does not meet their personalized privacy requirements. P3P relies on data that distributed Web site operators could easily manipulate themselves as the P3P says that they wrote. Critics also worry about P3P's ability to automatically transfer information about a user to a Web site that meets the user's privacy requirements.

The P3P protocol will be integrated as the next version of Microsoft's Web browser, Internet Explorer 6.0, which will be released this fall as part of the software giant's new operating system, Windows XP. Center for Democracy and Technology (CDT), active at www.cdt.org, policy issues are advocates who has advocated P3P for P3P and for stronger federal privacy provisions, criticized the logic behind the Internet Law Journal's criticism.

"The title of it suggests that one day we are going to eliminate some of the perfect solutions about privacy, which is not the case," Hoadley said. P3P is not intended to be a privacy panacea, but rather a tool to help consumers be advised.

"The question is, does it improve what we have now?" I would say any honest assessment would be yes."

Schwartz also questioned concerns raised by some in the privacy community that the rollout of P3P would stall legislative efforts within the U.S.

The most active congressional advocates of Internet privacy provisions, he said. Advocates of privacy legislation understand that "if P3P is going to work, you need a law in place," Schwartz said.

The lawmakers who use P3P as an excuse not to pass privacy legislation are probably those who have been opposed to passing federal rules from the onset, Schwartz said.

—Nancy

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Canada Internet adoption rate takes 42 percent leap into new millennium

CTMNA—The Internet played a larger role in Canadian households last year, registering the largest jump in use since federal government statisticians started tracking that access in 1991.

Statistics Canada (StatCan), online at <http://www.statcan.ca>, said in a report issued in late July that 32 percent of all Canadian households surveyed in 2000 had at least one occupant who could be described as a regular Internet user, up from 42 percent in the agency's 1999 survey.

StatCan spokesperson Jonathan Olson said that those figures encompassed Internet use at home, work, school and public-access sites such as libraries. But the biggest jump was in the number of households with users who cited home access as their primary Internet site.

StatCan said 46 percent of households included at least one regular Internet user who was most likely to be connected from home, up from just 29 percent in the 1999 survey.

In addition to reporting more connected Canadian households, StatCan said individual Canadians also seem to be spending more time online.

Olson said that of households with at least one, 71 percent said someone uses the Internet at least once times a week, up from 60 percent the previous year.

Looking at heavy users another way, StatCan said 61 percent of households had at

least one member who used the Internet 20 hours a month or more, up from 47 percent in 1999.

The fourth StatCan household Internet survey was conducted in January 2001 and collected information from nearly 34,000 households across the country.

When home access, the most likely source of Internet connectivity is the workplace, with 28 percent of households reporting at least one member with on-the-job access. Access at school was the next most likely source, reported by some 25 percent of households.

In 2000, 74 percent of households with Internet access connected via telephone lines.

While StatCan estimated that only one million households had high-speed Internet connectivity via cable TV lines, it pointed out that the figure represented a 155 percent increase since 1999's numbers.

The 3.7 million households StatCan said are linked via telephone lines represented a 29 percent increase since 1999.

Nearly 85 percent of households with at-home access use the Internet for e-mail, and nearly as many report "browsing" the Web. But when it came to identifying specific areas of interest for that surfing, the search for medical and health-related information came out on top, reported by 57 percent of households.

More than half of households reported using

the Net for information on travel and for keeping abreast of news. Nearly half said they used the Net to access Web sites operated by some level of government.

Less than 15 percent reported using the Internet at home for shopping, but 37 percent said they did some of their banking online.

Perhaps added was the fact that 80 percent of households reported being "concerned" or "very concerned" about privacy on the Internet.

Still, StatCan said, the 40 percent who said they had no concern about privacy was up from 10 percent in 1999.

Increased Internet penetration was found in all Canadian provinces, but Alberta continued to lead with just under 80 percent of households reporting Internet use.

Quebec had the lowest penetration, just 44 percent, but that was up 11 percent in 1999 and was among the fastest-growing, along with use in Prince Edward Island and Newfoundland.

StatCan said that household income continues to have an impact on Internet access rates, the more money, the more likely it is households are online. However, it said access among low-income families—meaning less than \$18,000 a year—grew by nearly 41 percent, compared to just 38 percent for those with higher incomes.

—Anandini

Wireless has streamlined for streaming



Media Inc. (www.mediainc.com), a provider of small business and home networking solutions, has unveiled its first product family in a new generation of multimedia entertainment streaming products.

The company says its Multimedia Wireless line offers the best data connection in the wireless networking market, allowing for continuous video and audio streaming on multiple PC and other Internet-enabled devices without interruption from any other network activity or applications typically found in the home such as e-mail, games or accessories.

"We are excited to be one of the first companies to acknowledge that the Internet is rapidly emerging as the dominant source for multimedia entertainment in the home," said Harold G. president and chief executive officer of Media.

Media's new line is comprised of the M1000 Multimedia Wireless to Internet Bridge and the M1000 Multimedia Wireless PC Network Card. Though they can be purchased separately, they are bundled in the Multimedia Wireless Starter Kit for an estimated total price of US\$200. The kit comes with a five-year warranty.

—TJF Staff

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Connects to your PC or laptop wirelessly
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P1 - \$99

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• HANDS ON •

Targus on target with accessories

When it comes to mobile computing, Targus (800/452-6262) has long provided users with accessories for their notebook PDs and PDAs. Now that sales of both Palm and Pocket PC devices have exploded, Targus has expanded its line of accessories for the handheld market.

The Storeway Portable Keyboard is one of the most interesting accessories in the Targus line. Currently available in the Handwriting



View, the HP Jornada 540 series, and the Compaq iPAQ series, the portable keyboard folds up into its own protective case, which is only slightly larger than the handheld itself. The keyboard sits in the bottom of the PDA, so the screen is exposed to its keypad. The Storeway is meant to be used in the palm of your hand, but the keyboard is light enough and cheap enough to make it more attractive than some alternatives—a full notebook or a standard PDA. For better, you can avoid having to practice stylus data entry and can input data faster. Storeway keyboards are about \$150 each.



For the world of Pocket PC, Targus has designed connectivity accessories for devices with CompactFlash (CF) slots. Wireless Web Card (\$199 each) are available for connecting to a variety of cell phones (Qualcomm, Siemens, and Motorola models included), and come with a PC Card adapter. The Low Power Ethernet card (\$199) is connected to a dongle with an RJ-45 jack at one end, so you can hook up directly to your network, whereas if you go, there's also a serial USB card (\$199), for use with serial devices like modems and digital cameras. And if you'd prefer to have your



wireless PDA enter the CF slot, Targus has a 344bps + 10 modem with a flip-up phone jack (\$129).

Also while using PDAs come with protection. Big covers or soft-cases cover, sometimes you just want something a bit more stylish. Targus has a number of leather carrying cases for both Palm and Pocket PC-based handhelds. Their leather wallet-style covers are available for Palm CE, Palm V and HandSpring Visor models (\$195 to \$245). They feature a spot for cash (with credit as an option), and have a built-in clip that attaches to the left side of the PDA. A larger 10-fold version (\$245) has more room for cards, cash, other documents and identification, as well as a spot for a pen or extra stylus. On the back basic side, there's a built-in case for the case models (about \$40).

For those looking for a bit more whimsy, there's the Leather Universal Handheld Case (about \$50), which has four card slots, a pen/pencil slot, and velcro pads for attaching your handheld—either Pocket PC or Palm devices. There's also a Universal PDA/Handspring Case (\$195), which features a spot on one side for your Storeway keyboard and room on the other for the PDA. It has both Velcro and the telescopic clip. This model has a slot for business cards, but no room for expansion cards.

There are just the three we had a chance to look at. For a full selection, check out the Targus Web site.

—Dean Cavalliere

Mac Station

The new standard of Macintosh performance for business

Two burning desires for the price of one.



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Relational databases



Orkay Sachin Thakore

Orkay Sachin Thakore

Once you've broken the ice and created your first database with Microsoft Access, you'll want to start exploring its relational capabilities. Access is a huge and powerful program, which can seem overwhelming at first. In the Feb. 2000 edition of this tutorial (which you can find at Computer.com), we took a first look at Access, creating a simple database to show that it really wasn't all that hard. This column was one of the most popular at the time. We got a lot of email asking us to take the column one step further. This month we'll do just that, introducing readers to the relational aspects of Access.

Even if you've never used Access, you'll be able to follow the step-by-step instructions. Though we use Access 2000, you'll find the steps are similar to Access 97 and 2002.

Setting the scene

What does the "relational database" mean and why might it be important to you? In our first Access column we created a simple database that stored data in a table format, much like a spreadsheet. The data composed either



Using the Wizard, creating a table to display related data from two tables is simple.

information about a number of employees at a company with each row of the table containing details for a single employee. The first is easy to input and use. Here's a sample of the data we used then:

Employee ID	First Name	Last Name	Date Hired	Dept.
101	Steven	Storham	12/17/95	Accounting
102	Neena	Mathews	12/17/95	Accounting
103	Lex	DeHaan	12/17/95	Sales
104	Lex	DeHaan	12/17/95	Sales
105	Walter	Tong	12/17/95	Service
106	John	Aburn	12/17/95	Service

Consider that each row that company does employee evaluations. For each evaluation, an evaluation date, score, and salary change

have to be recorded. While you could add these columns to the simple table for the first evaluation, it would become increasingly cumbersome as these columns would have to be added each year to record the evaluation data. As well, employees are not all hired at the same time, so a 30-year employee would require 30 additional columns of data, and a new year employee only three, resulting in a lot of wasted space. The same situation can get very confusing very quickly!

One alternative would be to add only one set of columns for an evaluation and, whenever an employee is evaluated you simply add another entry (row) for them to the file. The result would be that someone who has been with the company 20 years would have 20 entries in the file—one for each evaluation year. It would work, but would require a lot of the same data to be entered each year and would be awkward to keep up to date, particularly in cases where an employee changes departments.

The best solution would be to split the data into two tables and link them together using a single field that is common to both. This is what is meant by relational data—information in a table that bears a relation to information in another table. In this case, we'll have our employee file as it is and add a new table to store the evaluation data. That is a sample of what that data might look like:

Continued on page 89

Flash guide offers too few tips on latest version

By Kath Schenell-Roberts

Interestingly, Web developers are looking to Macromedia Flash to enhance the online experience. The author of this book, Indiana Contri, is a leading edge Flash developer who runs Web development agency in New York. With these credentials, it is surprising that there's so little in *Flash Web Design* about the new features built into Flash 5. The "new" look of the book—which has full-color images on each of its 254 glossy pages—only seems to drive up its price at the expense of legibility, and many of the examples require more than passing familiarity with other graphics programs. The book is good up to a point, just which it begins to look like a manual.

Flash Web Design

The Art of Motion Graphics
The v5 Book



Author: Indiana Contri
Publisher: New Riders/Jeff Preece/McGraw-Hill
<http://www.newriders.com>
ISBN: 024 pages, ISBN 0-7653-0261-0
\$29.95
Rating: Information content: ++
Readability: ++ (2)
Insider knowledge: ++
Overall rating: ++ (3)

This book is not aimed at those beginners. It assumes you at least know your way around Flash. Contri is a strong believer in Flash as a way to improve online user interfaces, using motion to help communicate ideas. The book includes at night different Flash applications, with

Continued on page 88

Java Tutorial: Part 9

Working with JBuilder Foundation

Borland's free Integrated Development Environment rocks!

My JBuilder Summary

Up to this point, we have been using the command-line interface for our Java programming course, adjusting—mostly when the program itself requires it—Windows scripts in VisualNet scripter. The reason for this choice is to get you used to using the command-line Java compiler (`javac`) and runtime system (`java`), and to use the `javac` and `java` commands.

There are important to know because many times Java developers need to use things not quickly on a user's machine—and they will be able to do so with the command-line version of Java (available at www.java.com and Internet Explorer 4.0's download).

But now another version is offering tools compiling versions of Java on full IDEs (integrated development environments) that we have to start looking at the JBuilder



Fig. 1 JBuilder's help documentation.

available from Borland (<http://www.borland.com>),
InfoNetworks (<http://www.inetnetworks.com>),
Borland Corporation (<http://www.borland.com>), and

WebGate (<http://www.webgate.com>). Go to each of these companies' Web sites to see what special v. downloads are available.

For that tutorial, we will be looking at Borland's JBuilder 4 Foundation environment for those reasons. First, it has one of the better IDEs, with drag-and-drop visual programming, visual-enhanced Java code editor, a very versatile and fast compiler, and very convenient visual debugging features. It is loaded with extra utilities including the very fine object database, *ObjectBase*. Perhaps most importantly, its help documentation alone is worth the price of admission (which is, incidentally, \$0.00 for the JBuilder Foundation Edition if you download it from the Web).

What sets the JBuilder documentation apart is that in addition to being very usable (you can often display API Java code as you

Continued on page 88

Latest version of genealogy guide U.S.-centric, technically stalled

By Keith Schwarz/IDG NewsNet

I knew I was at the moment I read the words from a Prolog user in the introduction to this book, Prolog? Won't that be online since you're in the car this day? Well, yes, and while there still is a Web-based Prolog service, that first impression of a somewhat technologically inaccurate approach proved to be accurate. Genealogy Online still relies heavily on U.S. sources, so unless a lot of your ancestors were in America, you may find it's the U.S. only to be of use as your research to start, this book was a real disappointment.

Genealogy Online, 1th Edition

Author: H. Kent Newell
Publisher: Dorset Inc. (http://www.dorsetinc.com)
ISBN: 0-805-5757-0
\$24.95 (hardcover)
\$14.95 (paper)
304 pages
1997

Rating:
Recommendation: *
Ability: ***
Researcher's Rating:
Overall: 3.0/5

As somebody who has made great strides in using the Internet as a tool to research my own family history, I expected a lot more from this book. Most of my ancestors are in the U.S., so understanding a future to connect with a fairly significant number of Catholics and Americans—yet I could find

only the latest version of U.S. genealogy links in the myriad of online resources mentioned with a few exceptions, those of European or Asian descent will find little of any help.

For a "first edition," I also expected a more comprehensive introduction of genealogical sources worldwide, rather than pages devoted to such topics as spent address directories and emigrants. There was also far too much material on the basics of Web surfing. While the author may be trying to fill things to relatively unengaged, casual visitors, she goes too far. I would have liked to have some more emphasis on how to get the most out of the online sources listed in the book. If you already know how to navigate the Web and use search engines, you won't get much further aided by reading this book.

While I suspect the first edition of this book may have been groundbreaking, this edition seems to suffer from a lack of updating in the right places and from the assumption that a teenage mother is relatively uneducated. I

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Wireless standards, Web revolution vs. evolution debated at Canada/Comdex

The 2001 edition of the Canada/Comdex trade show and exhibition took place in Toronto July 11-13. Following are some of the highlights of keynote addresses and panel discussions.

IBM leads into the mobile Web language
The Java 2 Micro Edition (J2ME) will emerge as a common platform for mobile wireless applications, said Mike Lazaridis, founder, president and chief executive officer of Motorola, Inc. (J2ME research by Nokia Inc. (NOK) is the upcoming keynote address at Canada/Comdex on July 11.

"Integration will not allow us to build a sustainable industry," said Lazaridis, whose company manufactures the popular BlackBerry handheld device. "Java and HTML/HTTP are the languages of the Internet, so finally it only takes one step for us to make the language of the mobile Web."

Lazaridis and the pioneer of mobile data applications is that the best wireless applications are the ones that use wireless capabilities the least, relying on local processing in such as they cut and downloading to the little data as possible. That makes the application useful even when the device is out of wireless coverage, he explained and keeps the cost of wireless communication down.

He said J2ME helps make this possible by separating applications from data. The Mobile Information Device Profile (MIDP) is essentially a set of application programming interfaces that allow the user interface for mobile data to be developed once, and then only the data to be updated as it is updated. Lazaridis said J2ME will make extensive use of this in what he called MIDlets. "In our estimation, MIDlets will become the BlackBerry what apps have become to Web browsers."

J2ME's other advantages include fast, private and secure storage of data, a built-in security model and the ability to replace applications remotely, he said. In fact, Java's dynamic linking capability means applications are loaded on the device, so an update requires only downloading the piece of code to be changed rather than the

whole application, he noted.

While admitting that integrated Java code runs more slowly than compiled code, Lazaridis maintained that properly designed Java applications can provide perfectly acceptable performance on mobile devices.

Lazaridis said manufacturers, including, he said, Motorola have an enormous place to be in mobile devices, and Japanese service provider NTT DoCoMo has mandated Java support for future devices.

Lazaridis also said applications that rely on push technology in which information is automatically sent to the user, will be more successful in the mobile world than those that rely on the user to pull information from a source. Successful push applications include paging and always-on e-mail and news services, he said, while pull-type applications, such as Web and email that require the user to make a connection in order to retrieve messages, are not doing well.

Control, tablet makes Canadian debut

Five to 10m for a Microsoft Corp. executive Microsoft's Canada Co. president Hank Dugg said his keynote address at Canada/Comdex on July 12 to demonstrate new and upcoming products.

Dugg announced WindowsCE, a Canadian version of the small-business Web services portal that was launched in the U.S. market in late 2000. The service helps small-business customers create and maintain Web sites through an online interface, and provides related services such as email, marketing and customer contact management.

The package includes a total of seven different services that can be packaged in various ways, at costs between \$25 and \$20 per month, he said.

Dugg also showed the Tablet PC that Microsoft is developing with several business partners, including IBM, Compaq, Fujitsu and Compaq. This device, which Microsoft chairman Bill Gates demonstrated at the Las Vegas Center in November, includes a version of the Windows operating system.

David Katz, a Microsoft Canada product manager

at, demonstrated the built-in digital ink application, which includes the ability to cut and paste handwritten text. The application also offers handwriting recognition, though Katz said "With my handwriting, even with today's state of the art, it's better leaving it to ink." Digital ink is a graphical representation of handwritten text, not converted to machine-readable text.

Dugg also took the opportunity to demonstrate some features of Windows XP (due to be released in October) and to talk about Net, Microsoft's vision for building applications and sharing data over the Internet using the XML.

He introduced David Perre, chief information officer at Hudson's Bay Co., which was Microsoft's XML technology in a system that links the department store chain to many of its suppliers. Perre said the system has helped Hudson's Bay offer its smaller suppliers capabilities that in the past were only accessible to large companies.

No Web 'revolution' for IBM

So say you want a revolution? Well, call IBM. The computer company says it is committed to Web services, but its customers want a revolutionary approach and are not interested in hype.

After Microsoft Canada Co. presented its ink sharing in a keynote address earlier in the day, IBM Canada officials spoke to a small group of reporters about their company's approach to Web services. Gail Turek, IBM Canada Ltd.'s vice-president of software sales, said IBM is already delivering support for Web services with its WebSphere tools.

"What you're not going to see from us is some kind of fancy brand name covering up our Web services," Turek said in an apparent reference to the .Net name that Microsoft has been publishing for the past year.

And he made a point of rejecting the idea of a Web services revolution. "Our customers don't want to hear that word," he said. "Revolution implies wholesale change, implies taking the current context." Customers want an evolutionary strategy that does not force them to

"throw out a whole bunch of stuff," said Turek.

Shelly Davis, manager for the IBM Global Business Unit in Canada, said that IBM uses both XML for messaging and the Java programming language for development as important parts of a Web services strategy, and is working in both areas while companies tend to concentrate either on messaging or on development.

She said some IBM customers are already relying on use of the company's existing Web services offerings, Internet is especially strong in the travel and entertainment industries. For instance, Web services might make it possible to plan a vacation, including flights, accommodations, travel tickets and other entertainment, as a visit to a single Web site. This is where services could pull together all the pieces even though they come from different sources.

Turek and Davis also emphasized standards, Turek and the concept of Web services simply cannot work unless it relies on standards. Turek also said his company is developing much of its effort to the underlying architecture and infrastructure for Web services.

Personal, intelligent network

Whether you are and whether device you are using, the network knows who you are. Devices communicate without wires, and voice and data do not just travel there but are integrated in seamless better. These were highlights of a Canada/Comdex panel discussion on digital networks.

Russ Green, director of technology at Novus Canada in Toronto talked of a broad trend to move services to work, starting with the replacement of multiple user interfaces with a single interface. The Web Internet is and the next step will be to put the intelligence in the network that could recognize a person regardless of what device they use.

Wick Bell, president of Stora Canada added that wireless technology will mean people will not even have to plug in their devices to be recognized. "The look at Bluetooth as the entry point to be in movement rather, as users as you walk through the door the system knows who

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Hacking Exposed (any edition) a must-read for network admins

By Keith Schwarzgill Roberts



The first edition of this book was a true best-seller, selling more than 100,000 copies. It has been translated into a dozen languages, several colleges and universities have developed courses around it, and it's consistently ranked in Amazon.com's top 100 during the first year of its publication. So is the second edition up to snuff? Well, let's put up that if you're a network or system administrator and have somehow avoided getting the first edition, purchasing the new edit the would be a good idea.

This update adds 200 pages of new content. It includes a new chapter entitled "Hacking the Internet User" devoted to threats posed via Web browsers and email software; a new chapter on Linux Windows 2000 based, just updates on details of some tools, new attack data and forensic techniques, and fresh case studies. There's also a new appendix Web site (<http://www.hackingexposed.com>) that carries the latest news and links to all of the tools referenced in the book.

The first volume of *Hacking Exposed* is devoted to common hacking practices, known "tools" of the trade, and the types of vulnerability they look for. The second section is devoted to known security holes in the major operating systems, such as Windows 95, 98, Mac OS, and 2000, as well as Linux, Netware and IIS. The third section looks at network hacking and the fourth section is devoted to commonly used software (i.e., polymorphic, Trojan, Internet Explorer).

Of course, one of the main problems with a book like this is that technology (and hacking) won't sit still. New tools come by approx weekly. But when this book is available is that it covers not only specific types of hacking attacks, but also common hacking methods (and tools), so network administrators can keep a look out for future variants of common types of attack.

So, if you have the first edition, do you need to buy the update? The wordy new terms can read like the second edition are good, but you already have the tools, know about the types of attacks, and know where to find information outside from the first edition. So the extra material may not be worth the price. However, if you are new to network security issues, and don't have the first edition, it is hard to go wrong by picking up a copy of this book. **B**

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United Nations says new technology could help reduce poverty

NEW YORK—Public policy is needed to harness new technologies that can be powerful weapons in the fight against poverty, a United Nations report said.

A report by the United Nations Development Program (UNDP) published in July says that employment of a wide range of technologies can make a major dent in world poverty.

"Spurring technological breakthroughs in medicine, agriculture and information will mean history opportunities to transform the lives of poor people," UNDP chief Kofi Annan wrote in a foreword.

But smart public policies, not only market dynamics, are needed to harness technologies to reduce poverty, the report said.

"The market alone will not take the benefits of technological progress for poor people and poor countries," said Sanku Falsafi for the author of the UNDP report. "On the contrary, it is likely to ignore them if only because they do not constitute a market."

Breakthrough medical technologies, such as new medication therapy and new vaccines, have already made an impact, the UNDP said. Information and communications technology can improve

business of small, enterprise, and geographical isolation, bring in access to information and education, and give the poor a stronger voice in matters that affect their lives, it said.

The report said information technology can speed political empowerment, such as the recent campaign that helped remove Philippine President Joseph Estrada in January. Poor countries also benefit from health networks, long-distance learning, and jobs created by new technologies.

But poor people have shied away from the potential of technology as a development tool, due to weak market demand and little or no public funding. "In a world, only 13 percent of global health research focuses on the diseases that contribute 10 percent of the global disease burden," the UNDP said.

The UNDP report can be seen at <http://www.un.org/2001/>.

—Bloomberg

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BCIT School of Electrical & Electronic Technology

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Courses and Programs



BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

PART-TIME FALL 2001

- Network Administrator Associate Certificate
- Cisco Certified Network Associate (CCNA™)
- Cisco Certified Network Professional (CCNP™) NEW
- A+ Technician
- LAN
- Network + Technician

CISCO SYSTEMS



We can help you get I.T.!

BCIT Electrical and Electronic Technology provides cutting edge evening classes to help you stay ahead of the rapid technological advances in today's workplace. Whether you are new to the field, changing careers, or already employed as a industry professional, our state of the art labs and industry-certified instructors give you the necessary training and guidance to excel in the high-tech industry.

Electrical and Electronic

604-432-8837 eeinfo@bcit.ca

Class Times and Locations

Generally classes at all sites run for three hours per night, one or two nights a week. Monday through Friday or six hours on Saturdays unless otherwise noted in course descriptions or in registration.

CITX Courses—Computing and Information Technology
ELEX Courses—Electronics Engineering

Note: (T) indicates courses are directly transferable to diploma program credits.

**Information Session for IT programs on
Tuesday, Aug 21 from 1800 to 2030.
To register, please call 604-432-8769 or
e-mail: eeinfo@bcit.ca.**

Network Administrator Associate Certificate Program

The Network Administrator Associate Certificate program has been developed to meet the growing demand within industry for individuals with comprehensive networking expertise.

This accelerated two-year Part-time Studies program is designed for students familiar with computer systems in the work environment. It is intended to provide students with the fundamental knowledge needed to design, configure and implement local and wide area networks.

This program will provide hands-on knowledge of major network operating systems, the underlying communication protocols and the supporting network hardware. Students are required to take all of the core courses and then choose one of three opening systems to successfully complete the program.

Choose one of the following options:

Microsoft Option

CITX	2140	Microsoft Windows 2000 Professional
CITX	2141	Microsoft Windows 2000 Server
CITX	2142	Microsoft Windows 2000 Network Infrastructure
CITX	2143	Microsoft Windows 2000 Directory Services Infrastructure

Novell Option

CITX	2178	Novell Netware 5 Administration
CITX	2171	Novell Netware 5 Advanced Administration
CITX	2172	Novell NDS Design and Implementation
CITX	2173	Novell Service and Support

Unix/Linux Option

CITX	2180	Unix/Linux Installation and Configuration
CITX	2181	Unix/Linux System Administration
CITX	2182	Unix/Linux Networking
CITX	2183	Unix/Linux Security Ethics and Privacy

Required Core Courses

CITX	1140	LAN Hubs On Level 1*
CITX	1141	LAN Hubs On Level 2*
CITX	1150	Structured Cabling for Computer Networks
CITX	1151	Understanding TCP/IP
CITX	1152	Router Essentials
CITX	1149	Next Technician can be substituted for CITX 1140 and CITX 1141



Networking Essentials

CITX 1140 \$355 Local Area Network Hands-on Level 1

Learn how to set up and configure computer networks. This hands-on entry-level course introduces the fundamental network concepts required to set up and configure a network. Training covers both peer-to-peer and client-server applications as well as network operating systems, includes server selection, cable and cabling installation, and performance/optimization management issues. (3 credits)

Sep 08	Res	100-2130	12 wks	8ET	CR	40551
Sep 11	Res	100-2130	12 wks	8ET	CR	40549
Sep 15	Sat	090-3400	4 wks	8ET		40510
Oct 21	Sat	090-3400	4 wks	8ET		40508

CITX 1141 \$355 Local Area Network Hands-On Level 2

Builds on the topics covered in Level 1. Students will expand their knowledge of LANs by examining wide area networking topologies and transmission methods and introduce the most popular network operating systems: Windows NT, Novell, Netware and Unix/Linux. It will address network security topics and how to troubleshoot and maintain networks. Network design implementation, planning and management factors will also be discussed. Prerequisite: LAN 1. (3 credits)

Sep 02	Res	100-2130	12 wks	8ET	CR	40502
Sep 03	Res	100-2130	12 wks	8ET		40519

CITX 1150 \$355 Structured Cabling for Computer Networks

Presents the student with the proper installation and testing procedures used for components of a structured cabling connectivity solution. A thorough explanation of the installation procedures for regular outlets, patch panels, cross connects, fiber optic connectors and splitters is included. A hands-on approach is used to familiarize the student with both the products and the approved test equipment. (2 credits)

Sep 14	Res	100-2130	4 wks	10P	CR	40501
Sep 14	Wed	100-2130	4 wks	10P		41111

CITX 1151 \$355 Understanding TCP/IP

This course will provide the student with a thorough understanding of the TCP/IP protocol suite. Key topics include Internetworking, Internet Protocol, Sub-networking, the Internet layer, Routing protocols TCP and UDP and Application layer protocols. (2 credits)

Sep 21	Tue	100-2130	8 wks	10P	CR	41114
Sep 21	Tue	100-2130	8 wks	10P		40511

CITX 1152 \$355 Router Essentials

This comprehensive course will provide students with the knowledge and skills needed to understand, configure and manage data network routers. The course will provide students with the critical principles required to manage an efficient and stable network infrastructure. Prerequisite: A comprehensive understanding of TCP/IP is required. (3 credits)

Sep 21	Res	100-2130	12 wks	8ET	CR	41111
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Network+ Technician

CITX 1145 \$760 Network+ Technician

Provides a comprehensive overview of networking technologies and prepares students to receive CompTIA's Network+ certification exam. Covers LAN/WAN protocols, topologies, transmission media, security and TCP/IP. In addition to explaining concepts, the course uses a multitude of real-world

examples of networking issues making it a practical preparation for the real world. Prerequisite: A comprehensive understanding of the PC in a work environment. (6 credits)

Sep 01	Tue/Thu	100-2130	12 wks	8ET	CR	40511
Sep 05	Sat	090-3400	12 wks	8ET		40512

Computer Hardware and Software

CITX 0120 \$555 Computer Hardware Setup Configuration and Maintenance

This hands-on course will familiarize the student with the internal hardware construction of a PC. The course covers the various components that make up a multimedia PC platform. This course also covers troubleshooting and the resolution of configuration issues.

Sep 10	Res/Wed	100-2130	4 wks	10P	CR	41141
Oct 21	Res/Wed	100-2130	4 wks	10P		40511

ELRX 2145 \$450 Intro to Computer Hardware (T)

Assembler and C programming are used for interfacing digital and analogue I/O. Explains ports, buffers, latches, decoding.

memory 8254 timer chip 8259 programmable interrupt controller 8258 UART. Prerequisite: COMP 2140 2720. (4 credits)

Sep 01	Tue	101-2145	12 wks	8ET	CR	30308
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ELEK 2125 \$750 C Programming (T)

Introduces C++, and the "C" programming language. Programming assignments are based on engineering applications. Students will document and debug software using available software libraries. (4-5 credits)

Sep 08	Res	101-2145	22 wks	8ET	CR	30311
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NORTEL NETWORKS



Nortel Networks

Get real-world post-secondary training for the networked economy.

In only four semesters this program will help you comprehend and become competent in the basic components of interesting building, installing, configuring, integrated networks and emerging technologies. Each course addresses student outcomes in each of five areas: technical knowledge, product competencies, problem solving, communication, human relationship skills and employment skills. NetKnowledge also provides real business case studies in which students solve networking problems in real life situations.

After completion of this four semester program students receive a NetKnowledge Certificate.

Careers take this technologically up-to-date program and learn about emerging technologies and the future of networking.

For full program details please call 604-432-8769 or www.bcit.ca

CITX 0310 \$1,999 Internetworking Fundamentals

Networking topics that will be covered will include basic network types, cabling and structured cabling systems, the OSI model, data transmission, Ethernet and other topologies, WAN, TCP/IP basics and overview of all major operating systems. In hands on labs you will get a chance to install a network, interface card, create a peer-to-peer network, set up an Internet LAN, build and use a WAN, use IP protocols, research industry certifications and use voice communication over IP. Leave the basics and then begin putting your knowledge to work. Prerequisite: Basic working knowledge of computers.

by 10 by Web 11/30/2008 12 hrs 20C 1M 4401

Network Testing and Trouble Shooting

CITX 0210 \$395 Cabletest Technician Training

Increase your effectiveness and productivity on the job in testing, certifying and troubleshooting network cabling systems. This comprehensive hands on course will cover structured cabling certification, LAN signaling protocols and industry related standards. Test equipment used will be the Fluke DSP 4000 cable analyzer.

by 11 by 09/01/2008 1 hrs 00C 1M 4401

CITX 0215 \$895 Troubleshooting the Ethernet Lan

This course examines troubleshooting issues "from the desktop to the hub" and provides hands-on training with real world examples. Topics covered will include cable characteristics and troubleshooting basic Ethernet infrastructure technology. Students will use the One Touch 10/100 to troubleshoot some networks.

by 4 by 09/01/2008 1 hrs 00C 1M 4401

In addition to the part-time courses offered at Electrical and Electronic Technology we also offer a broad range of courses for industry through our Industry Services departments. For more information on how we can help you achieve your training goals, please contact:

Sandy Shaw, Manager Business Development
School of Electrical and Electronic Technology
604-432-8719

For more information on these courses, visit our Web site at www.bcit.ca or contact us at 604-432-8769.



604-432-8769

www.bcit.ca

To register

1 Online - Easy, Safe, Quick!

From the BCIT homepage www.bcit.ca follow the Admissions/Registration link and you'll connect to the online form. Your registration will be confirmed automatically.

2 By Phone - 604-634-1610

3 In Person - Burnaby Campus

3700 Willingdon Avenue Burnaby



A+ Technician

CITX 8118 3899 A+ Technician

A+ certified technicians possess the knowledge and skills essential for becoming successful computer service technicians. This program covers the hardware and software technologies required in today's workplace and the material examined in the CompTIA A+ Certification exams.

Topics include:

Windows 2000
Installation, configuration and upgrading
Diagnosis and troubleshooting
Preventative maintenance
Mother board/Processor/Memory
Peripherals
Basic Networking

Prerequisite: Basic computer familiarity and knowledge are recommended.

Sep 16	Fri/Std	1810-2110	12 wks	BSF	ON	41348
Sep 17	Tue/Std	1810-2110	12 wks	BSF	ON	41349
Sep 15	Sat	9:00-1:00	12 wks	BSF	ON	41347

Operating systems

CITX 2140 5355 Microsoft Windows 2000 Professional

This hands-on course will teach you all the critical skills necessary to support Windows 2000 Professional and help you manage your network more effectively. You will be able to install, configure, and implement Windows 2000 Professional as your network's critical operating system. (3 credits)

Sep 16	Fri	1810-2110	12 wks	BSF	ON	41346
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CITX 2141 5355 Microsoft Windows 2000 Server

This hands-on class covers all the critical skills necessary to install, configure and implement Windows 2000 Server and help you manage your network more effectively. Students will learn to configure Remote Access Services, manage legacy software and troubleshoot and tune Windows 2000 for optimal efficiency. (3 credits)

Sep 12	Wed	1810-2110	12 wks	BSF	ON	41357
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CITX 2142 5358 NEW Implements MS/Win 2000 Network

This course is designed for support professionals who will be responsible for installing, configuring, managing and supporting a network infrastructure that uses the Microsoft Windows 2000 server family of products. (3 credits)

Sep 16	Fri	1710-2110	12 wks	BSF	ON	41871
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CITX 2143 5358 NEW MS/Win 2000 Directory Services Infrastructure

This course prepares you to plan, configure and administer the Active Directory infrastructure. Students will learn to configure DNS to manage name resolution, schema and replication. Students will also learn to use Active Directory to centrally manage users, groups, shared folders, network resources and to administer the user environment and software with group policy. (3 credits)

Sep 10	Tue	1710-2110	12 wks	BSF	ON	41874
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CITX 2146 5356 NEW Unix/Linux Installation and Configuration

This course provides students with the essentials of the installation and configuration process using native Linux commands and facilities. Some topics covered include: Linux/Unix commands, hardware and architecture, devices, Linux File Systems, boot installation, run levels and the X-Windows system. Students will gain hands-on experience by installing and configuring Linux successfully on a personal computer. **Prerequisite:** Familiar with computer systems in the work environment. (3 credits)

Sep 15	Sat	9:00-1:00	6 wks	BSF	ON	41325
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CITX 2148 5355 NEW Unix/Linux Administration

This course offers basic, hands-on administering a Linux system and discusses basic system administration tasks related to Linux. Some topics covered include: package management, kernel and editing, processing, printing, shells, scripting, programming, managing users, compiling and X window.

Nov 1	Tue	9:00-1:00	6 wks	BSF	ON	41338
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CITX 2170 5895 NEW SA-118 Fundamentals of Solaris System Administration

This course introduces new users to the Sun Solaris operating system environment. Students will learn basic Linux system administration including fundamental Solaris operating environment commands. Some topics covered include: file permissions, the vi text editor, command shells and file system navigation. The Common Desktop Environment will also be discussed. (3 credits)

Sep 12	Wed	1810-2110	12 wks	BSF	ON	41344
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CISCO SYSTEMS



Cisco Certified Network Associate (CCNA™)

Get underway by learning networking, step after critical communications around the world.

The Cisco Certified Networking Academy program is a complete, low-semester program providing instruction that will enable you to design, build and maintain small to medium-sized networks in regional, national and global organizations. The program features hands-on projects, drives, training that covers a broad range of topics, from basic networking skills

such as putting cable to more complex concepts such as applying advanced troubleshooting skills.

Upon successful completion of Levels 1-4 of the program, you are eligible to earn Cisco Certified Network Associate (CCNA™) certification. Cisco values you will be ready for a career in current and emerging technologies where there is a high-demand for qualified professionals.

CITX 1140 \$1,150
Cisco Networking – Level 1

Designed to provide students with experience in current and emerging networking technology. Students will learn available network problem solving techniques and concepts. Instruction will cover LANs, WANs, routers, router programming, networking, network standards, network terminology and protocols, the OSI model, cabling, cabling tools, star topology and IP addressing. Prerequisite: A strong interest and aptitude for computer applications and networks. Must have access to a multimedia capable PC. (6 credits)

by IS	Sat	0900-1400	12 wks	BCI	UM	44803
by IS	Fri/Sat	0830-1110	12 wks	HR		43421
by IS	Fri/Sat	0830-1110	12 wks	HR		45038
by IS	Fri/Sat	0830-1110	12 wks	BP		44872

CITX 2040 \$1,150
Cisco Networking – Level 2

Covers topics from Level 1 in greater depth and includes additional instruction in dynamic routing, the network administrator's role and function, Ethernet, Token Ring, routing type encounters and TCP/IP Addressing Protocol. Additional areas of coverage are Cisco IOS software commands, connect or and configurations, network router management, of configuration files, ICMP, backup and upgrade of Cisco Software, Image, RIP routing and OSPF routing. Prerequisite: Cisco Networking Level 1. (6 credits)

by IS	Sat	0900-1400	12 wks	BCI	UM	44814
by IS	Fri/Sat	1130-2200	12 wks	BCI		44815

CITX 2061 \$1,150
Cisco Networking – Level 3

Instruction extends the students' knowledge and practical experience with switches, LANs, WANs and Virtual Local Area Networks (VLANs) design, configuration and maintenance.

Students develop practical experience in skills related to Internetwork Packet Exchange (IPX) routing and Interior Gateway Routing Protocol (IGRP) protocols, configuring LANs, WANs and Internet networks and network troubleshooting. Prerequisite: Cisco Networking Level 2. (6 credits)

by IS	Fri/Sat	1130-2200	12 wks	BCI	UM	44816
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CITX 2642 \$1,150
Cisco Networking – Level 4

Introduces and extends the students' knowledge and practical experience with WANs, LANs, Integrated Services Data Networks (ISDN) protocols, interface ports and channels, Point-to-Point Protocol (PPP) operations, Frame Relay design and configuration and network troubleshooting. Upon completion, students are prepared to write the Certified Cisco Network Associate (CCNA™) Exam. Prerequisite: Cisco Networking Level 3. (6 credits)

by IS	Fri/Sat	1030-1130	12 wks	BCI	UM	44817
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CITX 2643 \$2,195
NEW Cisco Networking – Level 5 (CCNP™)

Learn how to install, configure, operate and troubleshoot complex routed LAN and routed WAN networks. This course covers topics including: Scalable Internet, WANs, Introduction to Managing Traffic and Access, Managing IP Traffic, Configuring Queuing to Manage Traffic, Routing Protocols Overview, Extending IP Addresses Using VLSM, Configuring OSPF in a Single Area, Intracompany Multiple OSPF Areas, Configuring Enhanced IGRP, Operating Routing Update Operation, Configuring RIP and Quality of Service. Prerequisite: CCNA. Certificate or have passed the four Cisco (CCNA™) Networking Academy Semesters. (6 credits)

by IS	Sat	0900-1130	12 wks	BCI	UM	44818
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NEW Cisco Certified Network Professional (CCNP™)

The CCNP program is comprised of four network levels of Cisco certification where students will learn how to install, configure, and maintain large, multi-geographic networks. Participants will learn about complex network configurations and how to diagnose and troubleshoot network problems. Students who successfully complete the advanced curriculum are eligible to earn Cisco Certified Network Professional (CCNP™) certification. The expertise you develop when preparing for the CCNP will add to your skill set and help you expand your professional options.

A CCNP can do the following:

- Implement appropriate technologies to build a scalable routed network.
- Build networks using state-of-the-art routing and switching equipment.
- Improve traffic flow, reliability, redundancy and performance for LANs, routed and switched WANs, and remote access networks.
- Create and deploy a global internet.
- Troubleshoot an environment that uses Cisco routers and switches for multiprotocol client hosts and services.

CISCO SYSTEMS

